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CONTENTS AND DIGEST

Importance of a Complete Roentgen Study of Gastro-Intestinal Tract and Gallbladder in All Obscure Abdominal Cases. George E. Pfahler, M.D., Philadelphia.....1951

What is meant by complete study. Costliness of mistakes from its lack. The author's procedure. Intensive study of organs. Diagnostic features of appendicitis. Cecum and ascending colon. Advantages of complete study.

Discussed by Drs. Sippy, Hayes, Heinen, Guttman, Soper and Pfahler.

The Diagnostic and Prognostic Value of Blood Urea in Urology. Albert E. Goldstein, M.D., Baltimore.....1957

Modern advances in diagnosis. Review of literature of blood urea in diagnosis. Method of procedure in making tests. Case report. Advantages of blood urea over urine urea for tests. Difficulties of phenolsulphonephthalein test. Types of obstructions.

The Influenza Epidemic in Chicago: The Disease as a Type of Toxemic Shock. Robert W. Keeton, M.D., and A. Beulah Cushman, M.D., Chicago 1962

Report on cases of influenza admitted to Cook County Hospital. Mortality. Duration of disease. Duration in the hospital. Clinical picture. Complications. Diagnostic difficulties. Treatment.

Postciliary Scleral Trephining for Acute Glaucoma. A. E. Ewing, M.D., St. Louis.....1967

Report of case in which operation was performed several times with unfavorable results. What the case teaches.

Discussed by Drs. Hardy and Ewing.

Treatment of Neuralgia of the Fifth Nerve by Injection of the Gasserian Ganglion. H. H. Martin, M.D., Savannah, Ga.....1970

Injection of the gasserian ganglion a recognized method. Indications for the operation. Technic of injection. Report of cases.

Discussed by Drs. Patrick, Beck and Martin.

MILITARY MEDICINE AND SURGERY

The Roentgenologic Study of Empyema Cavities. Franklin A. Stevens, M.D., Biltmore, N. C.....1975

The Ear in "Stunt" Flying. Lewis Fisher, M.D., and H. W. Lyman, M.D., Mineola, L. I., N. Y.....1977

Static Defects of the Feet: A Method of Accurate Diagnosis and a Treatment of Proved Value in the Army. Edward A. Rich, M.D., Washington, D. C. 1980

The Epidemic of Pneumonia Following Influenza at Camp Logan, Texas: Preliminary Report. J. N. Hall, M.D.; Murray C. Stone, M.D., and John C. Simpson, M.D., Camp Logan, Houston, Texas.....1986

(Continued on next page)

MEDICAL MOBILIZATION AND THE WAR 2002

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CONTENTS AND DIGEST—Concluded

A Recent Epidemic of Acute Respiratory Infection at Camp Custer, Mich.: Preliminary Laboratory Report. Wyndham B. Blanton, M.D., and Ernest E. Irons, M.D., Camp Custer, Battle Creek, Mich. 1988

Transfusion in the Desperate Pneumonias Complicating Influenza: Preliminary Report on the Successful Use of Total Immune Citrated Blood. C. W. Ross, M.D., and Erwin J. Hund, M.D., Washington, D. C. 1992

Erythema Multiforme: A Clinical and Laboratory Study of Forty-Seven Cases. William H. Guy, M.D., Camp Travis, Texas 1993

A Closed System of Drainage for Penetrating Wounds of the Chest. Marion A. Blankenhorn, M.D., France ... 1994

Relapses After Apparent Recovery in Delayed Tetanus. W. L. Whittemore, M.B., Shorncliffe, Kent, England .. 1995

The Failure of a Bacterial Vaccine as a Prophylactic Against Influenza. G. W. McCoy, M.D., Washington, D. C.; V. B. Murray, M.D., and A. L. Teeter, San Francisco 1997

NEW AND NONOFFICIAL REMEDIES

Description of Articles Accepted by the Council on Pharmacy and Chemistry 1997

Emetine Bismuth Iodide—Creosote Carbonate—Guaiacol Carbonate.

EDITORIALS

Thyroid Toxemia and Exophthalmic Goiter 1998

An explanation based on defective endocrine secretory function.

The Minimal Fat Ration 1998

Effect of reduced fat intake on comfort, health and efficiency.

The Progress of Preventive Medicine 1999

The demand in various countries for national departments of health.

Scurvy and Antiscorbutics 2000

Safety in regarding scurvy as due to a lack of suitable vitamin in the diet.

CURRENT COMMENT

The Government and the Health of Workers 2001

Cooperation of the Department of Labor and the Public Health Service in a study of industrial health problems.

Practical Economy 2001

The remittance slip for dues and subscriptions, in place of notification by mail.

The National Board of Medical Examiners 2001

Increasing value of the certificate of the board.

The Citric Acid in Milk 2002

A component whose physiologic function is unknown.

MEDICAL NEWS 2006

DISTRICT OF COLUMBIA: Personal—New Superintendent for Garfield Hospital — Address on War Surgery — Medical Society Election 2006
ILLINOIS: Chicago: Personal — Tuberculosis Institute Luncheon — Illegal Practitioner Fined—Work Against Drug Traffic ... 2006
LOUISIANA: State Board to Have Its Own Building—Demobilization Resolutions .. 2006
MARYLAND: Released from Hun Camp—Slight Increase in Influenza — Many Wounded Soldiers Arrive at Fort McHenry 2006
MASSACHUSETTS: Hospital in Nantucket—Personal 2006
MONTANA: Personal — Hospital Items 2006
NEW YORK 2007
NORTH DAKOTA 2007
OHIO 2007
PENNSYLVANIA 2007
WASHINGTON 2008
WISCONSIN 2008
CANADA 2008
GENERAL 2008
FOREIGN 2009
CORRECTION 2009
BUENOS AIRES LETTER 2009
LONDON LETTER 2009
PARIS LETTER 2010

MARRIAGES 2013

DEATHS 2011

PROPAGANDA FOR REFORM 2013

Emetin Bismuth Iodid Accepted for N. N. R.

CORRESPONDENCE 2014

Genital Gonorrhea in Early Childhood.
Influenza in Horse and Mule.
Germany's Guilt for Introducing War Gases.
Reduction of Respiration for Insomnia.
The Prophylaxis of Influenza.
Advantages of a National Department of Health.
Origin of the Use of Iodin for Skin Sterilization.

QUERIES AND MINOR NOTES 2016

Wearing Uniform After Discharge.
The Use of Lipovaccines Against Pneumonia.

MEDICAL EDUCATION AND STATE BOARDS OF REGISTRATION

Coming Examinations — North Carolina June Examination — Massachusetts September Examination — Colorado October Examination—Minnesota October Examination .. 2016

BOOK NOTICES 2017

MEDICOLEGAL

Injury to Employee from Vaccination — No Reason Why Chiropractor Should Be Excepted — Irresistible Impulse as a Defense to Crime — Impairment of Sight by Wood Alcohol an "Accident." — Rule as to Privileged Communications Applied to Roentgenologist 2018

SOCIETY PROCEEDINGS 2019

Coming Meetings.

CURRENT MEDICAL LITERATURE

American Medical Journals

Control of Hunger by Drugs 2019

Paroxysmal Tachycardia — Concentration of Urea in Human Blood — Effect of Ethylhydrocuprein on Experimental Pneumococcus Infections—Experimental Study of Therapy in Trichinosis—Metabolism in Hemochromatosis—New Treatment for Paralysis Agitans—Treatment of Infected Wounds Under Battle Conditions 2020

Treatment of Infected Hemothorax—Immunizing Properties of Bacterial Vaccines—Bactericidal Action of Whole Blood—Relation Between Proteolysins and Hemolysins—Influencing Complement and Antibody Production 2021

Immunity and Tissue Transplantation—Reading of Hydrogen-Ion Concentration in Bacterial Cultures—Syngenesioplastic Transplantation—Bacteriology of Tuberculous Kidneys 2022

Multiple Transplantations of the Thyroid—Increased Susceptibility of Roentgenized Guinea-Pigs to Tubercle Bacillus Inoculation—Properties of Pneumotoxin — A Wassermann Modification 2023

Foreign Medical Journals

Purulent Bronchitis Complicating Measles and Rubella—Incubation Period of Influenza — Pyemia Due to Organisms of B. Coli Group 2024

Blood Pressure and Psychoneuroses—National Medical Service—Ergot and the Prostate—The Endocrine Glands and the Bones—Pancreatic Infantilism 2025

Prophylaxis of Influenza—Treatment of Lupus—Echinococcus Cysts in Liver Simulating Gallstone Mischief—Sclerous Nephritis with Spirochete Jaundice—Retention in Acute Diseases — Spirocheturia and War Nephritis—Meningitis in the Army — Transfusion of Blood in Treatment of Meningococcemia. 2026

Syphilitic Nephritis and Gangrene — Ether Dressing—Echinococcus Chyluria—Syphilitic Peritonitis—Dead Bone with Fracture—Infantile Scurvy 2027

Spirocheturia in Spirochete Jaundice — Convergence of Eyeballs After Shell Concussion — Charcoal in Chronic Intestinal Disease—Serotherapy of Influenza—Viscosimetric Determination of Volume of Blood Corpuscles—Skull Wounds—Asthma in Children 2028

Magnesium Sulphate in Treatment of Chorea—Motor Control of Artificial Limbs—Pituitary Insufficiency—Ameba Parasites 2029

Pulmonary Tuberculosis in the Newly Born—Scurvy in Breast Fed Infant—Empyema from Streptococcus Septicemia — Spasm of the Glottis—Tardy Syphilis of the Liver—Poisoning from Datura—Chronic Bronchopneumonia—Prophylaxis of Transmissible Diseases in Porto Rico—Paralysis of Muscles of Neck—Heart Disease in Children 2030

Spinal and Chloroform Anesthesia—Fractures of the Skull—Treatment of General Paralysis—Danger of Purgative in Appendicitis—Indications with Contracted Pelvis — Plastic Operation on the Nose—Intraspinal Echinococcus Cyst—The Eye Signs in Pregnancy Toxemia 2031

The Ureter Peril in Gynecologic Surgery—Autoperception of Retinal Vessels—Thread Test of Gastric Chemistry—Quinin Poisoning—Obstetrics in Wartime—Induced Pneumothorax in Treatment of Gangrene of the Lung—Influenza 2032

TONICS AND SEDATIVES—BOOKS RECEIVED ..... Adv. Page 20

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IMPORTANCE OF A COMPLETE ROENTGEN STUDY OF GASTRO-INTESTINAL TRACT AND GALLBLADDER

IN ALL OBSCURE ABDOMINAL CASES *

GEORGE E. PFAHLER, M.D.

PHILADELPHIA

Generally a roentgen study of the gastro-intestinal tract is limited to the obscure cases. In such cases it is our duty to make the study complete. By a complete study, I mean the investigation of the gallbladder region for gallstones, enlargement and adhesions; a study of the stomach to prove that it is either normal or abnormal, and if abnormal, in what respect it is abnormal; a study of the duodenum; a study of the head of the pancreas; a study of the course of the food through the small bowel; a study of the appendix and the appendiceal region; a study of the colon, and very often it is advisable to make a study of the spinal column and of the urinary tract. If the spinal column and sacro-iliac region or the kidneys, ureters and bladder are to be studied, it should be done preceding the study of the gastro-intestinal tract, and should be done while the stomach and bowels are empty.

Such an extensive study involves more time and expense than an incomplete investigation, but gives a great deal more information and enables the physician or the surgeon to know the pathology and the function of these various organs so that he has a complete outline for his treatment. The expense and time consumed are increased, but one mistake will cost the physician and the patient more than ten complete examinations. Therefore, as a matter of economy as well as of efficiency, the examination should be complete. I have seen the futility of incomplete examinations so often that I almost refuse to make an incomplete study. The great majority of patients, sent to me for an examination of the "stomach" because of stomach symptoms, do not have any lesion in the stomach, but have disease of one of the other organs, most often the gallbladder or the appendix. If I were to confine my examinations to the stomach, because of the stomach symptoms, the patient would have spent time and money and would be little nearer a diagnosis than before. This is an embarrassment to the physician, a disappointment to the patient, and, to say the least, a detriment to the roentgenologist.

This does not mean that one should go through one of these abdominal studies in a routine and mechanical fashion, giving equal attention to each organ in each particular case, but, in the light of the symptoms and history, one should make an examination of all the organs, laying the greatest stress on the organ that is under suspicion, or on the organ which, during the course of the examination, suggests some pathologic condition. I have had patients who had been sent to me for gastric ulcer, and have found stone in the kidneys as the cause of the symptoms. In others, duodenal ulcer, or gallstones, or appendicitis, or intestinal stasis produced the symptoms. On the other hand, I have had patients sent for a study of the bowels because of a diarrhea and have found perforating gastric ulcer. I have had patients sent with a definite diagnosis of pyloric obstruction, probably due to carcinoma, and have found cardiospasm with enormous dilatation of the esophagus, so that the esophagus held quarts of fluid, and no lesion of the stomach. Often a patient is sent to me with suspicion of disease in the duodenum and I find gallbladder disease, or chronic appendicitis. On the other hand, symptoms of gallbladder disease are frequently due to chronic appendicitis. In some of the cases, the appendix is attached in the gallbladder region, which accounts for the peculiar location of the symptoms.

PROCEDURE

It is therefore my custom to allow at least forty-eight hours for one of these studies. I then request that the patient be given a bottle of magnesium citrate or some other agreeable purgative at 9 o'clock on the evening preceding the examination and ask him to report the following morning at 9 o'clock without breakfast, at which time, if there is any suspicion whatever of the possibility of disease in the urinary tract, a set of plates is made of the kidneys, ureters and bladder. If there is considerable aching about the spine, several plates are made of the spine. Then from six to eight plates are made of the gallbladder region. The patient is then taken into the fluoroscopic room. A hasty inspection of the chest is made with the fluoroscope, the condition of the lungs is noted, the movements of the diaphragm, the expansion of the chest, and the movements of the lung markings. The heart is studied as to size, shape, position, peristaltic movements. The mediastinum is reviewed. The abdominal cavity is inspected generally as to the curve and position of the diaphragm, and the outline of the liver and of the spleen. Very frequently one may observe the outline of the kidneys and at times detect the presence of a kidney stone preceding any opaque meal. Rarely one may even detect a stone in the gallbladder region.

I then give the patient an opaque meal, watch it pass down the esophagus, note the movements of the

* Read before the Section on Gastro-Enterology and Proctology at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918

walls of the esophagus, the general diameter, the amount of delay at the cardia, the opening of the cardia, and the passing of food through the cardiac orifice into the stomach. I then note the rate at which the opaque material falls to the bottom of the stomach, for generally one may detect a dilated stomach merely by the characteristics of the passage of the opaque meal to the lower pole, either through gas or generally through a collection of fluid when the stomach is dilated. One may judge the tone of the stomach by the passage of the opaque meal from the upper pole into the lower pole. As the stomach fills up, one may study its size, shape, the presence or absence of filling defect, and the presence or absence of any spasmodic contraction. If spasmodic contractions are present, it is then one's duty to determine their cause, which may be either intragastric or extragastric. If no spasm is present, one searches for filling defect, and any filling defect, excepting at the pylorus, may be detected fluoroscopically. A filling defect, however, may be present at the pylorus and may be detected only after a complete series of plates is made of this particular region. I believe that valuable evidence of gastric ulcer should be detected in about nine tenths of the cases, and in the great majority of them a definite diagnosis may be made. A perforating gastric ulcer is indicated by a projection of the opaque material beyond the outline of the stomach wall.

The absence of a filling defect means the absence of carcinoma, and I believe a negative diagnosis of carcinoma may be made when one is certain that no filling defect is present. Yet even when a filling defect is present, one cannot always ascribe it to carcinoma, as it may be due to adhesions, or inflammatory exudate secondary to a perforating gastric ulcer, or to pressure from the outside. The actual differentiation between carcinoma and gastric ulcer is a microscopic one, and in early cases cannot be made either from the roentgenologic or macroscopic appearance, for the stage at which gastric ulcer develops into carcinoma is almost beyond recognition by the microscope. All cases having macroscopic evidence of carcinoma of the stomach should be recognized roentgenologically. Fine differentiation between indurated gastric ulcer and early carcinoma is, however, unnecessary, for such lesions should always be excised at operation and treated as if malignant.

INTENSIVE STUDY OF ORGANS

The Stomach.—The position of the stomach does not carry with it the significance that was attached to it a number of years ago. We all know now that the stomach does not have the shape nor position which was so commonly described in textbooks of ten or more years ago, and with which we, at that time, were accustomed to make our comparison of our stomach findings and to arrive at the conclusion that anything different from those anatomic illustrations was abnormal. We know now that this is not true, and that the greatest variation in the position, the outline and the shape of the stomach may be present and be entirely consistent with health and must, therefore, be considered normal. I believe that there is as much variation within normal limits with regard to the stomach in its shape and size as there is between the shape and size of various men's noses. The variation in the size and shape of a man's nose may have some significance, but it cannot be looked on as evidence of pathology. So, too, variations in the form and position of the stomach may be of some clinical significance, but can not of themselves be looked on as pathologic. The brilliant work done by Mills[1] has done much to clarify this subject, and to teach us that the size, shape and position of the stomach is very often only a matter of type, and belongs to a type of man or woman just as the size and shape of his nose belongs to his type. The size, shape and position of the stomach, however, do help us to arrive at conclusions with regard to type and our dealings with the symptoms in this type of individual may be influenced by this knowledge.

The Pylorus.—The pylorus that presents smooth gastric and duodenal surfaces is generally healthy, but even so it may be very much thickened, and this thickening may be evidence of a long-continued pyloric spasm. One may find the pyloric line of sphincter measuring approximately one-half inch in width instead of one eighth of an inch as is normal. I believe that such thickened pyloric muscle is evidence of a pathologic state, even though it may not be evidence of a local pathology. A smooth duodenal surface associated with a jagged gastric surface of the pylorus should always arouse the suspicion of carcinoma, and one should not give up until this has been proved negative. In all doubtful cases there should be a large series of small plates, or multiple exposures, taken so as to get the fixed deformities about this valve, making from twenty to forty plates or photographic exposures of this region. On the other hand, if by careful fluoroscopic examination I can clearly see the outline of the wall of the stomach and peristaltic waves moving up accurately to the pylorus, and if everywhere I find smoothness and regularity of movement, I frequently make no plates whatever of the stomach and pylorus.

The Duodenum.—This organ is studied both fluoroscopically and by plates as to its position, its outline, its peristaltic movements and filling defect, and its retention. One should recognize, I believe, at least 95 per cent. of duodenal ulcers, and this evidence is indicated by filling defect or abnormalities in the outline of the duodenum, particularly the first portion. A filling defect or an irregularity about the duodenum does not always mean duodenal ulcer, for the same defects may be caused by adhesions or even by spasms, but when spasm is present, one must always think of a duodenal abrasion or early duodenal ulcer. I am more concerned over a duodenal spasm than over a fixed indentation or niche in one of the borders. A fixed indentation of the first portion of the duodenum, together with contraction of the entire duodenum in practically all instances is due to duodenal ulcer. Like the study of the pyloric end of the stomach, any doubtful sign of disease in the neighborhood of the duodenum should be studied by a large series of plates with at least from twenty to forty exposures. These may usually be small enough to embrace only the pyloric end of the stomach and the duodenum. These plate studies of the pyloric end of the stomach and the duodenum also frequently give valuable evidence as to the gallbladder, either in demonstrating calculi or in demonstrating displacement defect due to an enlarged gallbladder.

The Gallbladder.—The study of the gallbladder should show rather definite evidence of gallstones in about 50 per cent. of the cases in which they are pres-

1. Mills: The Relation of Bodily Habitus to Visceral Form, Position, Tonus and Motility, Am. Jour. Roentgenol., 1917, 4, 155.

ent, and doubtful evidence, which has some confirmatory value, in about 25 per cent. more. The demonstration of gallstones depends chiefly on the character of their composition, but also on the absolute stillness of the gallbladder, the amount of tissue overlying it, and the contents of the gallbladder. A gallbladder filled with fluid may give little or no evidence of the outline of gallstones, but one may get a general outline of it because of its increased density. This I have observed in a number of instances in connection with the strawberry gallbladder. Adhesions in the gallbladder region are indicated by abnormal attachments of the surrounding organs, such as the duodenum, the stomach, the colon, and are particularly recognizable when one is dealing with an otherwise gastroptotic stomach, in which one finds the duodenum hooked up very definitely in the gallbladder region, thus changing the entire shape of the stomach. Even the appendix may be distinctly attached to the gallbladder. One, of course, cannot observe the actual adhesions. One only recognizes the effect of the adhesions as is indicated by the displacement or fixation of the organs containing the opaque material.

The Small Bowel.—As the food passes through the small bowel, one should notice any abnormal delay in any particular portion, any evidence of fixation or kinking, or excessive dilatation.

The Appendiceal and Cecal Regions.—The most favorable time to study the appendix, the cecum and the ileocecal region is at the sixth, eighth and twenty-fourth hour period, and at each of these periods one should make a careful fluoroscopic study, together with palpation by means of a wooden spoon. I prefer a wooden spoon covered with a metallic circle which will always enable me definitely to localize the point of pressure. At times, one may find the appendix filled at the end of six hours, and yet empty at each other study. The importance of seeing the appendix filled is shown by the fact that one may definitely localize its position and determine, to a certain extent, its mobility or other evidence of adhesions. Very generally the appendix is visualized at the end of eight hours, and in nearly all instances it may be seen at the end of twenty-four hours. If it is not visualized, it very commonly means that the lumen has been obliterated, or that it may be filled with exudate.

DIAGNOSTIC FEATURES OF APPENDICITIS

The important diagnostic points with reference to the appendix and chronic appendicitis are:

Localized Tenderness.—This is the most valuable sign obtained, and is elicited either by direct palpation under the screen by means of the gloved hand, or much better (which is my practice) by means of a wooden spoon-like instrument, called a "distinctor." This wooden spoon may be passed readily under the screen and is controlled by the hand above the screen over the protection of the lead glass. If this spoon is surrounded by a rim of metal, one can easily see it move around over the different parts of the colon and of the abdomen, and by watching the ring can definitely localize the tenderness of appendicitis in the cecal region or over the appendix, wherever it may be located. When the appendix is visualized (that is, when the barium meal enters the appendix so that it may be distinctly seen), one can often localize the tenderness directly over the appendix, and when the appendix is movable not infrequently the localized tenderness moves with the appendix. I have been able, in a number of cases, to move the appendix as much as three or four inches, and in each instance the sharply localized tenderness moved with the appendix. This may seem contradictory, in view of some ideas of the sensibility of the viscera, but whether contradictory or inconsistent, it is a fact. Without suggestion to the patient, I have been able to move my wooden spoon around over the abdomen, and in each instance, when I came back to the location of the appendix, the patient complained of pain, even though I had moved the appendix from its original place. This tenderness is persistent and is present throughout the various studies made. At times it is acute, and sharply localized, and at others it is more or less general and less acute. A vague tenderness is more common when the appendix is retrocecal, in which instance there is considerable soreness, but the tenderness is not sharply localized until one twists the patient in such a manner as to bring the pressure directly to bear on the appendix, in which instance the pain is often quite acute. If no tenderness is present, and if at the same time the cecum is freely movable, I believe that one may say that no appendicitis exists. If, on the other hand, there is localized tenderness over the cecum, with fixation of the cecum, and no visualization of the appendix, it very frequently means an obliteration of the appendix by inflammatory exudate, which prevents the appendix from filling with the barium meal. Localized tenderness, with fixation of the cecum, and without filling defect, I believe, is strong evidence of appendicitis. Clinically the surgeon and the physician are apt to look for tenderness over McBurney's point. As we have many opportunities of studying the position of the appendix and the localized tenderness, we realize how much in error we may be if we depend on localized tenderness over McBurney's point as evidence of chronic appendicitis. For example, if the appendix is located deep in the pelvis, there will be absolutely no tenderness over McBurney's point. Likewise, if the appendix is located in the hepatic region, and very commonly when it is retrocecal, there is no localized tenderness over McBurney's point. Then, too, the appendix may be on the left side instead of the right, either because of nonrotation of the colon or complete transposition of the viscera.

Demonstration of the Appendix.—The appendix may occasionally be demonstrated by the opaque enema, but in many more instances it is demonstrated by means of the opaque meal, particularly when administered with buttermilk. I believe that, in the majority of cases referred for gastro-intestinal study in which the barium and buttermilk meal is administered, the appendix may be demonstrated if one looks for it at the end of eight hours, at the end of twenty-four hours, and at the end of forty-eight hours. It is not always visualized in a plate made of this region, but if one palpates the cecum by means of the wooden spoon, or distinctor, if the appendix has been filled with the barium, it may always be demonstrated, I believe, even if it is lying behind the cecum. To accomplish this, one should rotate the patient to the right or to the left sufficiently to bring the posterior surface of the cecum into view. The appendix may then be demonstrated if it is filled with opaque material. I believe that no case is thoroughly studied unless this procedure is followed.

Fixation.—A chronically inflamed appendix is very apt to become more or less attached to the surrounding tissues. It may be attached only at its tip, in which instance the greater portion of the appendix could be moved around freely, together with the cecum, and yet the tip of the appendix remain in a stationary position. On the other hand, the appendix may be fixed throughout, or it may be fixed at its base, and its tip may be movable. However, absence of fixation, or evidence of adhesions about the appendix must not be regarded as negative evidence in the diagnosis of chronic appendicitis, for we all know that an appendix may be inflamed and yet be freely movable. In this instance, the localized tenderness again is of value.

Position of the Appendix.—Normally the appendix is directed downward into the pelvis, but normally it is freely movable, and changes its position without external influence to a considerable extent during twenty-four or forty-eight hours. It not only changes its position but its shape, indicating that there is likely some vermicular or peristaltic movement associated with the appendix. One may find, therefore, an appendix producing chronic appendicitis lying in a normal position in the pelvis, or lying transversely, or lying along the inner side of the ascending colon; or it may be retrocecal, or, as in one case of mine, it may be wound around the pyloric end of the stomach. In a number of instances, I have found it up in the gallbladder region, in which instances, the patients are generally sent for a gallbladder examination rather than an appendiceal study. In general, when the appendix is directed upward or is retrocecal it is more likely to indicate chronic appendicitis.

Kinking or Angulation.—The mere bending of the appendix has no significance, for its shape will vary many times within twenty-four hours, but if there is a fixed angulation it is very commonly due to an adhesion at the point of fixation. This has distinct significance.

Constriction.—Constriction, or dilatation, or irregularities in the lumen may consist of a bulbous portion, or the whole appendix may be much dilated, or one may have marked irregularity in the lumen. All these conditions, I believe, have pathologic significance.

Abnormal Retention.—If the appendix remains filled with barium after the cecum and ascending colon have become empty, or after the entire colon is emptied, I believe it has pathologic significance.

CECUM AND ASCENDING COLON

At the same time that one is making records of the appendix, one should note abnormalities of the cecum and the ascending colon, such as fixation, abnormal position, abnormal dilatation, and filling defect or abnormal retention, for one may find retention in the cecum after the remainder of the bowel has been emptied one, two or three days, and this must be recognized as an abnormal condition. One should also study the mobility of the ascending colon and its relation to the transverse colon or the surrounding tissues. If careful palpatory studies are made under the screen, one may commonly diagnose the presence of any adhesions or any evidence of a jacksonian membrane, or kinking or angulation at the hepatic flexure. The same observations may be made with regard to the remainder of the colon.

Carcinoma of the Colon.—It must be borne in mind that carcinoma of the colon may exist for a considerable period of time without giving rise to symptoms, and even after it gives rise to some symptoms many months and even years may pass before the colon is entirely obliterated or true obstructive symptoms develop. So, too, when one is making observations of the opaque meal in its passage from the mouth, one rarely finds in the early stages any appreciable localized obstruction or stoppage of the bowel. If filling defects in the bowel are seen, they must always be confirmed by means of an opaque enema, for it is my experience that the opaque meal may pass for a considerable time from above, and yet an enema be totally obstructed at the point of constriction. This must, of course, be due to some localized associated spasm. Generally, even though the constriction in the bowel is very small, an opaque enema passes through the constriction and gives a very definite and fixed deformity of the bowel which may commonly be recognized definitely as carcinoma. It is my practice to follow an opaque meal through the bowel for forty-eight hours. This gives one a fair idea as to the general function of the gastro-intestinal tract, and enables one to recognize adhesions, localized tenderness, etc., and then finally at the end of forty-eight hours, if one gives an enema and fills the entire bowel, any filling defects are noticed more definitely and positively than can be done in any other way.

The Ileocecal Valve.—The incompetence of the ileocecal valve, which is common, may be recognized very often by passing a meal from the mouth, and at times one may find the ileum entirely empty at the sixth or the eighth hour period, and yet at the end of twenty-four hours find the ileum still filled with the opaque material. This can only mean that there has been regurgitation from the bowel into the ileum, most likely due to reverse peristalsis. Patients presenting this evidence of an incompetent ileocecal valve commonly have colicky pains, often a diarrhea, and very generally a considerable amount of gas, nausea and general distress. The incompetence of the ileocecal valve, I believe, is most commonly due to intestinal stasis, and is generally associated with an atony or stretched condition of the ascending colon, and this incompetent valve is simply a part of the general stretching of the colon. At times the incompetence of this valve is due to adhesions, secondary to chronic appendicitis or to a perityphlitis. If, on the other hand, one finds no intestinal stasis present, and does find some evidence of chronic appendicitis, the presumptive evidence is that the incompetence of the ileocecal valve is due to chronic appendicitis or to a perityphlitis.

ADVANTAGES OF COMPLETE STUDY

If one makes a complete study of this kind and finds the evidence of gastric ulcer, and perhaps also the evidence of chronic appendicitis, both conditions may be dealt with at the same operation; otherwise the patient cannot be expected to get entirely well until the other abnormal condition has been rectified. So, too, if duodenal ulcer is present, and at the same time one finds a well marked intestinal stasis, one cannot expect complete recovery until the intestinal stasis is also dealt with, as well as the duodenal ulcer. In fact, at times the symptoms of the duodenal ulcer will disappear if the intestinal stasis is thoroughly and competently treated. With reference to the gallbladder, I have seen patients that have traveled all

over this country consulting the best stomach specialists because of severe and persistent stomach symptoms, and only stomach symptoms. Yet I have found in them gallstones, the removal of which relieved all gastric symptoms. I have found gallstones by roentgen-ray examination because I had made a complete study, when all the symptoms seem to point toward a urinary rather than a biliary colic, even to the extent that the patient passed a slight amount of microscopic blood in the urine.

Chronic appendicitis, I believe, gives rise to more obscure symptoms in the abdomen than any other condition, and yet gives the most elusive evidence on which to base a diagnosis. If one makes a complete study of the alimentary canal, together with the gallbladder, and at times the urinary tract, spinal column and sacro-iliac region, one can practically always make a diagnosis or find pathology sufficient to account for the abdominal symptoms. I believe that such a complete study thoroughly done by a competent, skilled roentgenologist is of as much, and at times more value than an exploratory abdominal operation. Within a short period of two weeks, there have been sent to me three patients who have had exploratory operations done by competent surgeons because of the symptoms of gastric ulcer, in whom no evidence of gastric ulcer could be palpated by the surgeon, and the abdomen was closed. Within a year these patients were sent to me and in each of these three patients I found the evidence of malignant disease which was confirmed by a subsequent operation.

If such a complete study of the abdomen is made, I believe that carcinoma, if not present, can be eliminated from consideration in the diagnosis, and if present can, I believe, in all instances be diagnosed, or at least pathology suggesting carcinoma will be recognized which will be sufficient for an operation. The exploratory operation will then be for a definite purpose, at a definite location, to investigate a definite lesion, and when roentgen evidence points to carcinoma in the gastro-intestinal tract, the surgeon should be very sure that it is not carcinoma before he ridicules this diagnosis or eliminates it from his consideration.

CONCLUSIONS

1. A complete roentgen study should be made in all obscure abdominal cases.
2. Such a study should determine each organ to be either normal or abnormal, and if abnormal, the nature of this abnormality should be carefully described.
3. The diagnosis of carcinoma, if present, may practically always be made.
4. The absence of carcinoma may, in most instances, be proved.
5. Gastric ulcer may be recognized in about 90 per cent. of the cases.
6. Duodenal ulcer may be recognized in probably 95 per cent. of the cases.
7. Gallstones may be recognized in approximately 50 per cent. Other evidence of gallbladder disease may be obtained in 25 per cent. more.
8. Chronic appendicitis may be diagnosed in practically all instances.
9. Incompetence of the ileocecal valve may be recognized, and diagnosed only by this procedure.
10. Defects, adhesions, filling defect and abnormal function of the bowel may be recognized by this method better at times than by operation.
11. Diverticulitis may be recognized only by this method and by operation.
12. Carcinoma of the rectum may, at times, be more definitely determined as to its position, location and its extent than by a proctoscopic examination.
13. Patients generally obtain a great deal of mental satisfaction that is helpful in the cure of their cases, as the result of a complete study of this kind.

ABSTRACT OF DISCUSSION

DR. BERTRAM W. SIPPY, Chicago: Dr. Pfahler has presented the subject from the standpoint of the roentgenologist. It appeals to two classes, those who, through experience, have been conducting roentgen-ray examinations of the gastro-intestinal tract for diagnosis, and those who are familiar with it only through writings and hearsay. Our duty is not done in obscure cases until we have made a complete examination. The difficuty is, how do we know that a case is obscure? Sometimes it may appear to be obscure when it is not; and mistakes in diagnosis are apt to be made by making only a routine examination. If we are going to diagnose cases properly, we may well refer them to a competent roentgenologist.

The doctor made a very strong plea for complete examination. I wish to supplement that plea by making a plea for complete examination nonroentgenologically. Physicians usually are too narrow in their vision of intestinal troubles, looking at intestinal troubles only with the idea of giving cathartics or enemas. They are confused by intestinal stasis, by disturbance of the ileocecal valve, by Jackson's membrane, by a large amount of rubbish, names that have very little significance. They should know these things are remedial, and that there are not very many diseases or disorders of the stomach for which patients seek relief. If we eliminate cathartics and enemas and rivet attention on the serious possibilities, realizing that by working with a little understanding, there are mighty few cases that cannot be studied without roentgenology and conclusions drawn that will be influenced very little by roentgenology. Having started this work before we had the roentgen ray to help us, we developed a certain technic in our diagnosis of gastro-intestinal disorders, and we make fewer mistakes when we carry that out as accurately as possible than we would otherwise. When one does that, I want to say to you, from long experience, that it is possible to do your work so accurately that it is only now and then that the roentgen ray will give you very material advantage. But we cannot get along without it, because we do not know just what it is going to show. It will show things like these diaphragm hernias that you cannot get in any other way.

DR. WILLIAM VAN VALZAH HAYES, New York: I am disposed to endorse strongly every word Dr. Pfahler said, except one statement, that the only way we can tell if the ileocecal valve is incompetent is by means of the roentgen ray. I do think we can frequently get information about this if we use our hands and ears intelligently.

I wish to emphasize what Dr. Sippy said of the extreme importance of a thorough study of the case by the gastro-enterologist before the roentgenogram is made. I do not think that giving the barium meal, and seeing if the stomach is empty in six hours, is an adequate test of the duration of digestion. The stomach may act differently with different meals, and it is very desirable to make other tests, such as the rice and raisin test and the "duration" test (two soft-boiled eggs, a glass of water and roll), which should be out of the stomach in three and a half hours. The roentgen ray furnishes extremely valuable confirmatory evidence, and sometimes gives an insight into conditions that would be overlooked without it. For example, we have gone over the abdomen carefully, and have concluded that the organs are all in normal position; we have tested the position of the stomach with the patient reclining and have found the greater curvature at the umbilicus, or slightly below, and all seems to be right in that respect. We send the patient to the

roentgenologist, and learn of the existence of a very marked gastroptosis. It has been shown that when the patient stood with the meal in the stomach, the stomach dropped down about 4 inches. Some of these patients can be relieved by using a supporting belt or corset. The roentgen ray is particularly valuable in showing the presence or absence of filling defects in the stomach and bowel, and this, perhaps, constitutes its most important aid in gastro-enterologic diagnosis. We should avail ourselves of the skill of the roentgenologist to the greatest practical extent, in order to get a full-rounded diagnosis. If we do, and if we make thorough studies ourselves, we can go forward in confidence, feeling sure we shall know whether there should be an operation or whether we can get results by medical treatment.

Dr. A. Heinen, Chicago: The view of the gentlemen preceding me as to the value of roentgenology in gastro-intestinal disturbances is correct. I always contend that if you depend on the diagnosis of gastro-intestinal disturbance by the roentgenologist, you will make more mistakes than you ever made. The principle in diagnosis of gastro-intestinal disturbance is a thorough physical study of the case and the laboratory findings. In the diagnosis of ulcer of the stomach by the roentgen ray, retention may be due to spasm; but as we are all most concerned by the importance of the diagnosis of carcinoma of the stomach—which means death to the patient—I think that an early diagnosis of carcinoma is of the greatest importance, because you can save the patient's life by the proper surgical procedure. The roentgen ray fails in the early diagnosis. The early diagnosis of carcinoma is made only if you seek for carcinoma. If the roentgen ray shows that carcinoma is there, it is a late diagnosis. In the early diagnosis of carcinoma, I rely on the history, physical examination, and, above all, on the occult blood test of the stool. Carcinoma of the stomach is mostly the medullary form and begins in the mucous membrane; it consists mostly of blood vessels—very little stroma—and as the growth breaks down constantly, blood always is present in the stool. If you find occult blood in the stools for a period of a week, carcinoma is present. The roentgen ray will not show anything in this stage, not until two or three months later, when the patient is doomed.

Dr. J. Guttman, New York: We can all fail once in a while, particularly if we base the diagnosis on one fact. Dr. Pfahler did not intend to convey the impression that we should limit our diagnosis to roentgen ray. He intended to say that it is absolutely necessary to be thorough, whether you do it in a clinical way, or in a chemical way, and when you do it from the roentgenologist standpoint you must be particularly careful to be thorough, because it is the little details which enable you to make a correct diagnosis. Why is the diagnosis more important than anything else. No physician has done his duty to his patient, in spite of any effective treatment he may have instituted in that particular case, unless he knew why he was making the application of this particular therapy. So first and foremost comes the diagnosis. If we can make a diagnosis without the aid of any tests, well and good, but if not, let him resort to chemistry and the roentgen ray. If I were to chose my methods of diagnosis, I would say, give me clinical experience; if my clinical experience teaches me that I am dealing with a gastric ulcer, and the laboratory findings may tell me there is achylia gastrica and other evidences present which might indicate carcinoma, I shall be firm in my diagnosis of gastric ulcer. If clinical experience tells me I am dealing with carcinoma of the stomach, and the roentgen ray will fail to find definite or other evidence, I shall still put my faith in my clinical diagnosis. Often the roentgen ray leads in the proper direction, not always; but the failures are not so much because of the ray itself, but because of the way it has been used. It depends entirely on the man and on the method used, and on the interpretation of the findings. But taking it as a whole, first comes proper clinical diagnosis, then the laboratory work, whether it is chemical or roentgen ray, done in the proper way and by an expert. The time is coming when we will all become expert in roentgen-ray laboratory work, when every man who is considered a gastro-enterologist will not make a diagnosis unless he is a roentgenologist. It is going to be a necessary part, just as much as knowing how to handle a stomach tube. Dr. Pfahler says he finds the appendix very often. I never saw the appendix visualized as frequently in giving the patient the ordinary barium meal or carbohydrate meal as I do when I give him buttermilk. After twelve or fourteen hours, I find the appendix visualized, if it can be visualized.

Dr. Horace W. Soper, St. Louis: Boas, who originated the occult blood test, has always admitted that it was of no value in the early diagnosis of cancer. He states so explicitly, and I think that this has been the general opinion of all men of large experience with the test. It occurs late in the development of the growth. No examination of the gastro-intestinal tract is complete without the roentgen-ray findings; and in the hands of an expert it is our only method of obtaining an early diagnosis in cancer. I think that Dr. Pfahler's percentage figures in relation to ulcer and appendicitis are very conservative.

Dr. George E. Pfahler, Philadelphia: More mistakes in diagnosis are made through carelessness than through ignorance; and that applies whether it be in roentgenology or any other method of diagnosis. It is lack of thoroughness that is generally the cause of the mistakes. The mistakes in the diagnosis of carcinoma of the rectum in the majority of instances are due to the lack of the physician putting his finger into the rectum. The great majority of cases that have gone on for a long time have been neglected because the physician has not introduced his finger into the rectum; and that is only an illustration of the absolute carelessness that is going on all over the country in the matter of diagnosis, and it applies to clinical medicine, and perhaps even more to roentgenology. In regard to the ordinary clinical examination—and the roentgenologic findings are also clinical—I agree with everything Dr. Sippy said, and everything Dr. Hayes said. Of course, we should use every means of diagnosis, and use the roentgen ray also, and you will have that much more thoroughness in the diagnosis. When the diagnosis differs, there is something wrong in the observations some place, and it should be corrected by more thorough study.

With regard to the diagnosis of early carcinoma, I challenge not only Dr. Heinen, but any man, to make a diagnosis of carcinoma—the early diagnosis of cancer of the stomach that I cannot make with the roentgen ray, if the work is done thoroughly. You cannot, however, make such a diagnosis if you are going to depend on technicians, men who are simply paid to work a certain time, and are generally underpaid. In certain cities some hospitals have no physicians in charge of their roentgen-ray department. They depend on the technicians to make their studies, and then commercialize the roentgen-ray department so that they can get the greatest amount of money for the least amount of work out of them. That is the cause of mistakes in diagnosis, and that is what prompted me to write this paper. Patients are sent for a stomach examination at so much per, and then because a mistake is made he comes back and damns the roentgen ray. The patient thinks he has had a roentgen ray examination, but you know he has not. The patient is the one who suffers. Somebody gets some coin that does not belong to them. The only plea I make is, more thoroughness in the roentgen-ray examinations and thoroughness in the clinical diagnosis.

Epidemic Diseases in City and Country.—It is true that epidemics of disease spread with greater rapidity in the cities owing to the fact that the infected person is liable to come in contact with a large number of persons in a short time. But sources of infection are more promptly located, the hospital for contagious diseases is made use of without delay, and the common agencies for the prevention of disease in our cities are not so readily available in the sparsely populated parts of the state. By this I refer to the efficient health organization of the city with its corps of inspectors, laboratory workers, epidemiologists, etc. Added to this is the efficient nursing organization, ever ready to lend timely aid.—Byron U. Richards, M.D., *Bulletin Rhode Island State Board of Health.*

THE DIAGNOSTIC AND PROGNOSTIC VALUE OF BLOOD UREA IN UROLOGY *

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In partially reviewing the literature on urology of the past three decades, one's attention is immediately attracted to the advances made on the surgical and diagnostic sides, though the advances of the former depend almost entirely on the latter. That is, as the newer methods in diagnosis of urologic conditions have developed, the urologist has become more competent as a prognostician and therefore was enabled to perform operations that otherwise would not seem feasible. Furthermore, the advances in diagnosis have been principally aided by the more modern laboratory methods of the blood and urine, and one finds himself dependent on the various chemical tests of the blood and urine, together with the action of various dyes on certain organs before a urologic operation is performed.

The work of Koranyi[1] on cryoscopy, of Heidenhain[2] on indigocarmin, of Von Mering[3] with the phlorizin test, of Geraghty and Rountree[4] on phenolsulphonephthalein, and the various contributions to science on the methylene blue test, rosaline test, indigocarmin urine urea and other examinations of urine, etc., are doubtless familiar to all the members of this Association.

The literature up to date is teeming with endless variations of these tests, each having its own followers, each one in itself being applied best to certain classes of cases only, and each one an excretory test. In most institutions, three, four or all the tests were employed, and from the data collected from the combination, conclusions were drawn. In view of the misleading interpretations that followed the use of some of the foregoing methods at various times and in various classes of cases, the importance of retention tests was soon recognized, and in the past few years less stress has been laid on excretory tests and much more stress on some of the retention tests, particularly blood urea, nonprotein nitrogen, creatin and uric acid.

The work by Marshall and Davis[5] on "The Distribution of Urea and its Elimination from the Body," the work by McClean and Sellig[6] on "Urea and Total Nonprotein Nitrogen in Normal Individuals," and that by Folin and Denis[7] on "The Diagnostic Value of Uric Acid Determinations in Blood," have encouraged investigators to seek methods from which more conclusive data could be obtained than by the excretory methods which at all times and in all classes of cases did not correspond. Schwartz and McGill,[8] in their series of 211 cases, have shown conclusively the importance of blood urea, and Tileston and Comfort[9] have demonstrated the relationship of it in health and disease. Gillard[10] employs it with great satisfaction in the diagnosis of surgical diseases of the urinary tract and Scherck and Gradwohl[11] have shown conclusively that no urologic case is completely examined for diagnosis or operation without the employment of a retention test.

My investigations for the past three years have been carried out practically along the same lines as those of Scherck and Gradwohl, the principal retention test employed being that of blood urea. The cases selected for the work were all urologic cases, in the services of Dr. Rytina and myself.

The method employed for determining the blood urea at first was Marshall's[12] (that of using serum), and later Van Slyke's[13] (that of using whole blood) and calculating on the per liter of blood basis with a normal consideration of from 0.3 to 0.6 gm. per liter of blood. The number of cases in my investigations up to the time of writing was 104, on which 280 blood urea determinations were completed.

For purposes of comparison and to demonstrate partially some of the surpassing qualities of blood urea in relation to diagnosis and prognosis in genito-urinary surgery, I have employed the three following tests, which are the most uniformly used and the simplest of application: (1) the urine urea test; (2) the phenolsulphonephthalein test, and (3) the ordinary chemical and microscopic examinations of urine (albumin, casts, etc.).

METHOD OF PROCEDURE

The method of procedure was as follows: When a urologic case was admitted to the hospital, some urine was taken for microscopic and chemical examination. An intravenous injection of phenolsulphonephthalein was given, some blood was taken for a blood urea and whenever possible, a twenty-four hour specimen of urine collected for urine urea determination, either the Hüfner[14] or Marshall[15] method being employed. The patient was not placed on any special diet, except in cases in which possibly there were some constitutional disturbances present. Therefore the intake of proteins was practically constant and did not interfere materially with the relative comparisons of the blood urea, although the patient was advised to drink water copiously. In from three to five days, the same procedure was carried out to determine the course of the case, that is, whether conditions were becoming more or less favorable for the patient and for the surgeon. If the various tests, particularly the blood urea, were within normal limits on the first examination, and the second examination demonstrated an improvement or lack of improvement, I could at this time begin to consider the prognosis of the case, should operation be contemplated. If the blood urea increased in amount, which of course indicated a higher degree of toxicity, operation was delayed and the blood was

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* Investigations carried out in the Urological Departments of the Mercy and Hebrew Hospitals.

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taken again in from three to five days. This procedure continued until the blood urea reached within the normal limits of from 0.3 to 0.6 gm. urea per liter of blood. In most cases a phenolsulphonephthalein was given at the same time that the blood was taken for urea determination. Should the blood urea, after a number of determinations, not reach the upper normal limits, then when a stationary point was reached and the operation was imperative, it was performed, providing the stationary point was not too far above the upper normal limits. In this manner, I was able from my series of cases to standardize approximately (as one might call it) the minimum and maximum retention of urea that might be present in the blood before operation was performed with impunity. This will become apparent from the study of the accompanying tables. Here it is obviously seen that only rarely did a patient recover from an operation with a blood urea of more than 1 gm. per liter of blood (the prognosis being considered grave here at all times) and at no time was the prognosis grave, urologically speaking, with a blood urea of less than 0.75 gm. As will become apparent from the study of the accompanying tables, in the few cases in which the patients with blood higher than 1 gm. were operated on, it will be readily observed that the patients developed uremia, the prognosis having been made before operation. This development took place in all cases with the exception of certain types, such as some prostatic hypertrophies and strictures of the urethra, in which a cystostomy was imperative for retention, irrespective of the condition of the patient. Then the operation was subsequently completed if conditions permitted, as in Cases 24, 31 and 55, all of which were stricture cases with recoveries following operation. Peculiar as it may seem, patients with a blood urea of more than 1 gm. who were operated on and recovered, appeared not to have as stormy a recovery if the obstruction were a urethral, rather than a renal or prostatic obstruction. Whether this is a mere coincidence or the resisting powers are greater, I am unable to state.

In cases with a blood urea between 0.75 and 1 gm., in which operation was necessary, only a fair prognosis was made, depending on whether the stationary point reached was a progressive decrease or a progressive increase in the amount of blood urea. This point was determined only by a series of blood urea determinations, best demonstrated in Case 86. This patient is at present in the hospital and has been there for the past three months under the preoperative regimen. His blood urea on admission was 0.55 gm. urea with a phenolsulphonephthalein of 55 per cent., and 10 gm. urine urea daily. Blood urea tests were completed in from five to seven days, with a result that there was a constant variation rising to 0.81 and dropping back to 0.6 and then rising again. In view of other conditions present, this patient would be a surgical risk, unless his blood urea would remain stationary, somewhere below 0.75 gm. or between 0.75 and 1 gm. A point of great interest here is that the blood urea and phenolsulphonephthalein were within normal limits on admission and, should dependence have been placed entirely on the one determination, this patient would unquestionably have developed uremia and died. Hence the importance of a series of blood urea determinations before operation. In only one case in which the patient was operated on and in which a very favorable urologic prognosis was given before the operation, the patient died from a renal insufficiency, that is to say, of a uremia following an acute renal suppression probably due to the

TABLE 1.—COMPARISON OF RESULTS OF BLOOD UREA, PHENOLSULPHONEPHTHALEIN AND URINE UREA TESTS

Case Number	Name	Diagnosis	Blood Urea Gm. per Liter of Blood				Intravenous Phenolsulphonephthalein for Two Half-Hour Collections			Urine Urea Gm. per Diem, Doremus			Urine Examination	Prognosis		Operation	Results	Remarks
			Admission	Preoper. 1st	Preoper. 2d	Postoper.	Admission	Preoper.	Postoper.	Admission	Preoper	Postoper.		Admission	Preoperative 2d			
24	G. C.	Stricture of bulbomembranous urethra, calculus in prostatic urethra	1.04	1.04	0.75	0.6	2%	1%	35%	3	3	14	Albumin +++; pus cells ++; staphylococci	Fair	Good	Cystostomy and external urethrotomy	Improvement	Operation imperative
25	G. K.	Stricture of bulbomembranous urethra	0.96	0.94	....	0.6	10%	...	40%	10	..	16	Albumin ++; few pus cells; colon bacilli	Good	Good	Dilatation	Improvement	
30	H. K.	Stricture of bulbomembranous urethra, uremia	4.1	4.1	*	*	*	*	*	8	8	..	Albumin ++	Grave	Grave	Dilatation	Died	Patient died soon after admission
31	T. Y.	Stricture of bulbomembranous urethra	1.2	1.1	0.4	0.3	5%	5%	40%	2	5	..	Albumin ++; few pus cells; casts; staphylococci	Poor	Good	Cystostomy and external urethrotomy	Cured of stricture	Operation was imperative
55	J. L.	Stricture of bulbomembranous urethra, perforating fistula	1.0	0.9	....	0.7	†	†	†	†	†	†	Albumin +++; casts and few pus cells and organisms	Fair	Fair	External urethrotomy; excision of fistulous tract	Cured	Operation was imperative
71	J. W.	Vesical calculus	0.5	0.5	....	...	5%	5%	....	3	3.5	..	Albumin +++; pus cells ++; and organisms	Good	Good	Perineal section and cystostomy	Died	Demented. Refused nourishment

* None obtained. † Unable to obtain on account of perforating fistula.

administration of ether or some other unknown cause, as no necropsy was obtained.

CASE 1.—The case is worthy of mention. The patient was H. A., a man, aged 60, with a diagnosis of papilloma of the bladder and a moderate benign hypertrophied prostate. His blood urea on admission and previous to operation was 0.33 gm. per liter of blood, the phenolsulphonephthalein test was 45 per cent. for two half hours. The urine examination showed many red and white blood cells. Cystoscopic examination revealed a small papilloma of the bladder and slight intravesical bulging of the prostate. The systolic blood pressure was 145, the diastolic 95, and the heart and lungs normal. In view of the excellent condition of the patient, he was operated on three days after admission. The papilloma with the normal surrounding tissue was excised and a sphincterotomy performed at vesical neck. Two days after operation the patient had the appearance of being toxic, drained only about 250 c.c. in more than twenty-four hours, in spite of forced liquids, infusions, etc., and before blood was taken for a blood urea test the patient died, three days after operation. We were unable to obtain necropsy, but with a preoperative normal blood urea and a suppression following operation, the cause of death seemed obvious. I regret very much that I did not have a blood urea test in this case, previous to the patient's death.

Seven other patients that were operated on died after a favorable prognosis was given based on the blood urea determination, but here in all the cases the cause of death was not a renal insufficiency, as will be apparent from the study of the accompanying cases. One died of a pulmonary edema following a perineal prostatectomy, a second of a streptococcus infection following a cystostomy for drainage, a third of a septicemia following a suprapubic prostatectomy, and a fourth of starvation, in which case the patient was of the demented type and, following operation, refused nourishment. A fifth died of pneumonia following a suprapubic cystostomy, a sixth died of pneumonic tuberculosis following a nephrectomy, and a seventh died of pulmonary embolism following a nephrectomy. Certainly a urologist cannot be blamed for the deaths of the foregoing seven patients, as these deaths could have occurred in any other operative cases.

ADVANTAGES OF BLOOD UREA OVER URINE UREA TEST

The advantages of blood urea over urine urea will become apparent from the study of Table 1, the principal advantages being as follows:

1. The great variation, which exists in the normal and leads to inaccurate interpretations, on which account it is difficult to determine when one is dealing with a borderline case.

2. The disappointing results produced by the quantitative estimate of this normal urinary constituent, because of the fact that the amount of these substances excreted depends not only on the functional activity of the kidney, but on the amount of these substances carried to the kidney for excretion.

3. The inability to obtain a correct and fairly accurate twenty-four hour specimen of urine.

From a study of a series of tables I have completed, of which only three have been included in this paper for lack of space, it was observed that from the urine urea determinations certain patients would have been considered favorable surgical risks and others unfavorable surgical risks, best demonstrated in some of the cases of the accompanying tables.

TABLE 2.—RELATION OF BLOOD UREA TO URINE ANALYSIS IN OPERATIVE CASES

Case Number	Name	Diagnosis	Blood Urea Gm. per Liter of Blood				Intravenous Phenolsulphonephthalein for Two Half-Hour Collections			Urine Urea Gm. per Diem, Doremus			Urine Examination	Prognosis on Admission	Operation
			Admission	Preoper. 1st	Preoper. 2d	Postoper.	Admission	Preoper.	Postoper.	Admission	Preoper.	Postoper.			
12	D. B.	Benign prostatic hypertrophy	1.7	...	...	...	Trace	....	....	..	..	..	Albumin —, red blood cells —, white blood cells —, organisms +	Grave	None
16	T. L.	Benign prostatic hypertrophy	0.78	0.45	0.45	0.41	35%	55%	....	20	..	..	Albumin +, few pus cells	Good	Perineal prostatectomy
18	W. O.	Benign prostatic hypertrophy	0.28	0.3	...	...	75%	....	....	25	..	..	Negative	Good	Suprapubic prostatectomy
5	A. E.	Malignant prostatic hypertrophy	2.6	3.4	...	...	None	None	....	..	..	..	Albumin —, white blood cells or red blood cells, specific gravity 1.002	Grave	No operation
37	M. M.	Benign prostatic hypertrophy	0.68	0.64	...	0.5	57%	58%	60%	..	..	..	Albumin +, few white blood cells	Good	Suprapubic prostatectomy
40	B. R.	Benign prostatic hypertrophy	0.6	0.6	...	...	55%	54%	....	18	..	..	Few white blood cells	Good	Suprapubic prostatectomy

CASE 2.—The patient whose case was of particular interest from this standpoint was B. C., a young man, aged 24, who developed a lobar pneumonia. During his convalescence, a partial suppression of urine set in, and the first four days after I saw him, he voided between 175 c.c. and 300 c.c. of urine in twenty four hours. His blood urea during these four days remained stationary, that is, from 1.44 to 1.45 gm. per liter of blood. A very grave prognosis was given. An intravenous phenolsulphonephthalein in this case showed only a trace of phenolsulphonephthalein for two, one-half hour collections. His urine urea remained fairly constant during these days, varying from 1.05 to 1.36 gm. per diem. There were albumin, casts, and red blood cells constantly in the urine with a specific gravity ranging from 1.008 to 1.014. Under forced fluid intake, on the fifth day, he excreted 1,250 c.c. of urine with a specific gravity of 1.010, a urine urea of 12.4 gm., and a blood urea of 2 gm. In spite of his increased urine urea, his blood urea increased. I gave a

very unfavorable prognosis. On the sixth day, his output increased to 3,500 c.c. with a specific gravity of 1.012, a urine urea of 35 gm., a phenolsulphonephthalein of 3 per cent., but a blood urea of 2.7 gm. On the seventh day, the urine urea increased to 38 gm., and the blood urea to 3.2 gm. In spite of the increase in the output of urine and the increase in urine urea, after his blood urea left the stationary point of 1.45 gm., the outcome of the case to me was obvious, and on the eighth day, with an output of 4,000 c.c. of urine with a specific gravity of 1.012, a urine urea of 40 gm. and a blood urea of 3.2 gm., the patient died of a toxic uremia and pyemia. During the last three days, his temperature ran very high with a high leukocyte count, and he had areas of tenderness in several parts of the body.

The discussion of this case is simple. Under the forced intake of fluids, the kidneys began excreting hypernormally, conveying with the excretion only a small quantity of solids; hence the low specific gravity.

TABLE 3.—BLOOD UREAS IN TWO-STAGE PROSTATECTOMIES

Case Number	Name	Diagnosis	Blood Urea Gm. per Liter of Blood				Intravenous Phenolsulphonephthalein for Two Half-Hour Collections			Urine Urea Gm. per Diem, Doremus			Urine Examination	Prognosis		Operation	Results	Remarks
			Admission	Preoper. 1st	Preoper. 2d	Postoper.	Admission	Preoper.	Postoper.	Admission	Preoper.	Postoper.		Admission	Preoperative 2d			
23	L. M.	Benign prostatic hypertrophy	0.74	0.74	0.41	...	10%	*	*	21	25	..	Albumin +++, few pus cells and organisms	Good	Good	Cystostomy	Died	Developed streptococcus infection
7	J. N.	Benign prostatic hypertrophy	0.9	0.9	0.46	0.4	40%	42%	50%	25	28	30	Albumin ++, few pus cells, red blood cells and organisms	Fair	Good	Cystostomy and suprapubic prostatectomy	Cured	
6	J. C.	Benign prostatic hypertrophy	1.2	0.76	0.6	...	32%	20%	....	20	..	..	Albumin +, few pus cells, casts	Grave	Fair	Cystostomy and suprapubic prostatectomy	Died	
2	C. M.	Benign prostatic hypertrophy	0.45	0.34	....	...	Trace	32%	....	..	..	..	Albumin +, red blood cells +, white blood cells +, casts +	....	....	Cystostomy and suprapubic prostatectomy	Cured	
28	G. N.	Benign prostatic hypertrophy	3.5	0.8	3.5	...	None	10%	....	..	10	..	Albumin ++, white blood cells +	Grave	Grave	Cystostomy	Died uremia	Drainage improved condition, but gradually developed uremia
41	A. W.	Benign prostatic hypertrophy Median Bar.	0.61	0.6	....	...	18%	...	....	..	..	..	Albumin ++, white blood cells +	....	....	Punch	Cured	

* Unable to obtain.

The liver in this case was unquestionably manufacturing an extra quantity of urea (Van Slyke[16]), which was being partially taken up by the kidney and excreted in the urine; hence the high urine urea. But with the increase in the manufacture of urea by the liver, the kidneys were excreting only part of it and the remainder of it was being stored up in the circulation; hence the increase in the blood urea and toxic condition of the patient. This is one of the types of uremia cases that I believe Foster[17] classifies.

DIFFICULTIES OF PHENOLSULPHONEPHTHALEIN TEST

Every urologist, I am certain, has met with certain types of urologic conditions in which, on account of mechanical impossibilities, it was difficult for phenolsulphonephthalein to give a true status of conditions. This will become apparent from the study of Table 1. Here it is again observed that Cases 24, 25 and 31, from a standpoint of the phenolsulphonephthalein test, would have been poor operative risks, but from the blood urea determinations, operation was deemed advisable and the patients made uneventful recoveries. Vice versa, some cases had high or apparently normal phenolsulphonephthalein, but high blood ureas, and in each case the patient died before operation was undertaken. Fortunately, this has not occurred many times. In this manner many cases have been diagnosed as good operative risks and others diagnosed as poor operative risks, according to the blood urea examinations. When renal surgery is necessary, blood urea in itself is not sufficient. Here it may be employed only as a prognostic agent. For diagnosis, it is absolutely essential to obtain relative renal function, and it is here that I believe the excretory tests, such as phenolsulphonephthalein, indigocarmin and urine area, are indispensable.

The presence or absence of albumin, pus and casts today does not play as important a rôle as it has in the past excepting where a renal or vesical lesion is suspected, and here it is ruled out by cystoscopy and catheterization of ureters, which is very essential. But for the presence of abnormal constituents in patients to be operated on for the prostate urethra, or bladder, I am certain that if other conditions are within normal limits, operation need not necessarily be delayed.

Other tables were completed, but are not to be presented in this paper for lack of space in which the blood urea phenolsulphonephthalein and urine urea practically all agreed, and from which sufficient data could be collected from the combination, enabling the urologist to proceed with the necessary operation with

16. Van Slyke, D. D.: Proc. Soc. Exper. Biol. and Med., 1913-1914, 15, 487.
17. Foster, N. B.: Uremia, The Journal A. M. A., Sept. 23, 1916, p. 927.

safety. This last class I may say, though, did not include more than 60 per cent. of the cases. In the other 40 per cent. of the cases there were disagreements in results of the tests, so that if phenolsulphonephthalein and urine urea had been depended on entirely, operation would have been performed, and our mortality rate would have been increased, as in most instances the patients developed uremia and died.

As a prognostic agent in genito-urinary surgery, I consider blood urea to be almost infallible, and from my results deduced in my many investigations, I can readily say that a favorable or unfavorable prognosis may be made, according to the amount of blood urea present at various times, only to be determined by the studying of a series of urea tests of the blood in each case.

TYPES OF OBSTRUCTIONS

In the series of 104 cases, there were eighty patients operated on and twenty-four not operated on. This included all the genito-urinary conditions, but the variations that existed were principally in the following classes of cases: (1) certain types of hypertrophied prostate; (2) large vesical calculi; (3) impassable strictures of the urethra; (4) stones in the ureter; (5) pyelitis; (6) suppression of urine; (7) large vesical neoplasms; (8) strictures of the vesical neck; (9) diverticula of the bladder, and (10) uremia.

A brief survey of the surgical pathology of each of the foregoing conditions will convince the reader that he is dealing with a mechanical obstruction in most cases. Therefore, there should exist a difference between the excretory and the retention tests, accuracy being detailed to the retention test, principally for the reason that the entire excretory function, be it phenolsulphonephthalein or urine, cannot be collected entirely through the medium of voiding or catheterization. In some cases, this is true of hypertrophied prostates, when some urine is retained in the bladder that the catheter does not remove, principally when there is a large median lobe, therefore the calculation is inaccurate; hence the reason for the wide discrepancy between this and the retention test. In large vesical calculi, large vesical neoplasms, and in some cases of diverticula of the bladder, the same condition exists; not all the urine can be collected, therefore, all the phenolsulphonephthalein is not collected. Here is a case of particular interest:

CASE 3.—H. W., aged 54, was admitted to the Mercy Hospital from a neurologic sanatorium to have a perineal prostatectomy done. The urethra of the patient was very sensitive, and in addition to his being demented, he refused a complete examination, allowing only a rectal examination. A large hard mass was felt which at the time was considered to be prostatic tissue. The urine examination revealed a normal specific gravity, a low twenty-four hour urine urea, a phenolsulphonephthalein test of only 5 per cent. for two half hour collections and a blood urea of 0.5 gm. In spite of the low phenolsulphonephthalein, a perineal prostatectomy was decided on. In fact the patient insisted on an operation through the perineal route. After the patient was anesthetized and a sound passed into the bladder, a definite click of a calculus was obtained. The urethra was opened through the perineum, the finger was inserted into the bladder, and a very large calculus was felt. On account of its large size, it could not be delivered through the urethra, and a suprapubic cystotomy was necessary. A stone weighing 9 ounces was removed. The patient did nicely for several days after the operation, but beginning on the fifth day following the operation, he refused to take nourishment. We forced feeding through tubes both rectally and by mouth, but in spite of all this, he died on the twelfth day following operation. His blood urea before death was 0.5 gm., the same as before the operation. There is practically no discussion to this case, excepting that the phenolsulphonephthalein was low, due to the inability to collect all the urine which contained the phenolsulphonephthalein and not because it was not excreted.

In the cases of impassable strictures of the urethra and strictures of the vesical neck, here again all the urine is not voided or collected through a catheter, and again the phenolsulphonephthalein reading becomes inaccurate from the standpoint of dependability. In all the foregoing types of cases that I have mentioned, the phenolsulphonephthalein, probably in a large number of cases, was excreted, but not collected, the fault lying not in the excretion of the drug, but in the collection of it on account of the obstruction. Likewise, in the case of stones in the ureter, the kidney on the involved side is excreting the phenolsulphonephthalein, but on account of the obstruction all the urine is not passing by the calculus; hence inaccurate results again. In the cases of pyelitis, a different picture presents itself. Invariably, if not in all cases of pyelitis, we have an accompanying dilated pelvis which may have a capacity of from 10 to 200 c.c. Here again, if there has not been total destruction of the kidney, the urine or dyes, whatever they may be, are being excreted, but unless a ureteral catheter is inserted to withdraw the retained urine in the pelvis, accuracy cannot be obtained. This is best conveyed to the mind of the reader by the following case:

CASE 4 (No. 63).—B. C., aged 24, was admitted to Mercy Hospital with a complaint of urinary frequency. The urine examination revealed a very large quantity of albumin, pus cells, a few red blood cells, colon bacilli and staphylococci; a combined phenolsulphonephthalein of 26 per cent. was obtained for two half hour collections. The patient was cystoscoped, her ureters were catheterized, and many pus cells, colon bacilli and staphylococci were obtained from both sides. The pelvic capacity of each kidney was between 75 and 80 c.c. Both kidneys functioned with a continuous drop suggesting a hydronephrosis. The blood urea at this time was 0.6 gm. per liter of blood. The diagnosis of bilateral pyelitis of pregnancy was made. The pelvis of each kidney was irrigated with a 1 per cent. solution of silver nitrate. This procedure was carried out once a week for six treatments, and at the end of this time, the patient felt very much improved. A relative phenolsulphonephthalein test was obtained giving 35 per cent. output from the right kidney and 11 per cent. output from the left kidney, a total of 46 per cent. The blood urea at this time was 0.37 gm., showing a marked improvement. She left the hospital, returning for treatments. Two months later the patient was admitted to the hospital to be delivered. A combined phenolsulphonephthalein test gave only 21 per cent output. A blood urea at this time was 0.48 gm. per liter. One week later the patient was delivered and made an uneventful recovery.

In discussing this case, it is obvious that with existing bilateral hydronephrosis, some of the urine was retained in the pelvis of each kidney, this being demonstrated at the time of each pelvic lavage. Keeping this point in mind together with the fact that when a relative phenolsulphonephthalein was given and collected by catheterization of the ureters, we find that an output of 46 per cent. was obtained. At the time of the patient's delivery her blood urea as stated was 0.48 gm., which is within normal limits, while her phenolsulphonephthalein was only 21 per cent., which is below the normal. This is undoubtedly due to the retention of phenolsulphonephthalein in the pelvis of each kidney, as a previous phenolsulphonephthalein of 46 per

cent. was obtained after its injection and collection by catheterization of the ureters. On both occasions, the blood urea was well within the normal limits.

The blood picture in all cases of pyelitis varies from the information obtained from phenolsulphonephthalein. The dye or urine for the hour or two of calculation is being excreted by the kidneys according to the extent of the lesion, but is partly retained in the pelvis of the kidney. The decrease of the output of phenolsulphonephthalein in these cases always exceeds in proportion the increase in the retention of urea. The only explanation that can be offered here is the theory of retention in the pelvis. In suppression of urine and its subsequent condition of uremia, we have two conditions which may be recognized sooner by a series of blood urea determinations than by any other test, simply on account of its being a retention test. On several occasions, an oncoming uremia was diagnosed in this way long before the information was obtained by the excretory tests.

As the cause of death in a large percentage of patients operated on for urologic condition is uremia, it is of utmost importance to the urologist and surgeon to diagnose this condition before the operation, thereby lowering materially his percentage of mortality; and it is here that blood urea excels all other tests as diagnostic and prognostic agents if the method that I have employed is carried out and one remains within the boundary line of maximum retention of blood urea.

It has not been my intention in this paper to lead one to believe that I have discarded the use of other tests for diagnosis and prognosis, because I have clearly demonstrated in the paper that there are certain conditions that befall the genito-urinary tract, under which the other tests must be employed in addition to blood urea, to determine the true status of conditions. From the foregoing information I have been able to draw the following conclusions:

CONCLUSIONS

1. In blood urea we have a valuable retention test to be used in the diagnosis and prognosis of urologic cases.
2. It may be employed in all urologic cases without any special limits.
3. Blood urea as a prognostic agent in urology is practically infallible, if employed by the method I have described.
4. It is a simple procedure and may be used to advantage when the excretory tests such as phenolsulphonephthalein, urine urea, etc., cannot give the desired information.
5. When relative kidney function is desired, it should be used in conjunction with the excretory tests.
6. In a case with a blood urea of more than 1 gm. per liter of blood, the prognosis should be considered grave, and less than 0.75 gm. as good.
7. An oncoming uremia may be diagnosed long before the clinical signs make their appearance, and before the excretory tests can give the information.
8. Its employment will materially decrease the percentage of mortality held against the urologist or general surgeon.

330 North Charles Street.

Anesthetic Preferable in Shock.—Nitrous oxid and oxygen is the anesthetic of choice of men who have suffered from shock or serious hemorrhage.—*Review of War Surgery and Medicine.*

THE INFLUENZA EPIDEMIC IN CHICAGO

THE DISEASE AS A TYPE OF TOXEMIC SHOCK

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CHICAGO

The following report is based on the cases of influenza admitted to Cook County Hospital, and on personal observations and experience in their treatment. We believe a careful statistical report of those cases is valuable for two reasons: First, it will serve to correct and amplify many opinions and conclusions which physicians dealing with a more limited set of cases have formed; second, it will aid in understanding some pre-epidemic obscure cases. For about eighteen months the term "atypical pneumonia" has been frequently used to designate cases which did not conform

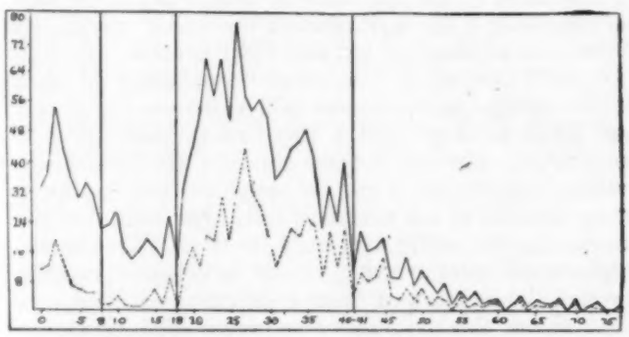

Chart 1.—Admissions and deaths with reference to age: solid line, admissions; broken line, deaths.

to textbook descriptions, but which have been increasing in numbers. Some of these cases made their appearance in the hospital over one year ago, and in the spring of 1918 constituted many of the so-called lobar pneumonias. They were admitted to the hospital and discharged under varying diagnoses, as bronchopneumonia, capillary bronchitis and epidemic mixed infections. We now know we have just passed through a period in which those more or less sporadic and obscure cases have grown into epidemic proportions.

Two previous reports have appeared from the Cook County Hospital, one[1] dealing with the etiology and pathology primarily, and another[2] with one of the complicating factors (pregnancy). The present work is based on a study of 1,735 completed records in which the patients have been discharged, either through death or recovery. These were drawn from all ages and included males and females living under conditions reproduced in all large cities throughout the country. From an epidemiologic point of view, the statistics should furnish valuable supplemental data to those being reported from the Army camps.

1. Nuzum, J. W.; Pilot, Isadore; Stangl, F. H., and Bonar, B. E.: Pandemic Influenza and Pneumonia in a Large Civil Hospital, The Journal A. M. A., Nov. 9, 1918, p. 1562.
2. Woolston, W. J., and Conley, D. O.: Epidemic Pneumonia (Spanish Influenza) in Pregnancy, The Journal A. M. A., Dec. 7, 1918, p. 1898.

ADMISSIONS

Because of the epidemic nature of the disease and the rather limited hospital facilities, instructions were issued to the county and examining physicians to accept for the hospital only patients that were really ill. Under such a working rule the final hospital diagnosis showed the distribution of cases to be 38.2 per cent. of influenza with or without bronchitis, and 61.8 per cent. of bronchopneumonia.

Age as influencing the incidence is shown by Chart 1, and it will be noted that the density of admission falls into two groups, one terminating with the eighth year, and the other lying between the eighteenth and fortieth years.

According to sex, the percentage of males was 59.2, and of females, 40.8.

This is rather interesting from an epidemiologic point of view. The male population was much reduced by the Army drafts. The floating population that frequents the saloon and cheap lodging house and is subjected to untoward conditions of life had been largely eliminated by the "work or fight" ruling.

The females did not remain at home in greater proportions, because the prostration of the class of cases accepted was such that they would have been a burden on the family, rather than an aid. It is safe to conclude, therefore, that males were affected in larger numbers than females. This may mean that because of their more frequent contact with each other in crowded streets and cars, the opportunity for infection was greater in the male than in the female.

MORTALITY

The total mortality reported by Nuzum and his collaborators[1] was 31 per cent. This was figured on the basis of the receiving office records of admissions, and the deaths for the corresponding number of days. Our data, taken from completed records of discharged cases, shows the slightly higher figures of 39.3 per cent.

Age.—Reference to Chart 1 again shows a close similarity between the number of admissions and deaths. From a casual glance one might conclude that this was the only factor concerned. The density of admissions falls into four groups as shown by the vertical lines bounded by 8, 18 and 41 years. The death rate for each of these groups was: to 8 years, 26.6 per cent.; from 8 to 18 years, 18.5; from 18 to 41 years, 44.7, and above 41 years, 52.7 per cent.

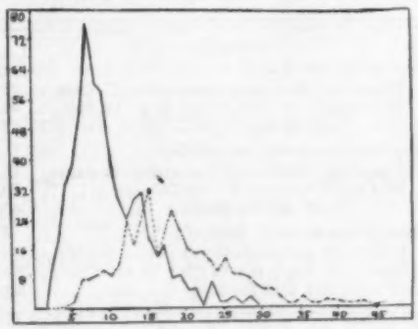

Chart 2.—Duration of bronchopneumonia from onset until discharge from the hospital by recovery, or until death: solid line, deaths from bronchopneumonia; broken line, recoveries.

In the light of the frequent comment that the children and old people stand the influenza much better than adults, it will be noted that old age is not a period of good, but of poor prognosis, while the lower mortality of youth is confined primarily to the years between 8 and 18.

Sex.—In the series studied, the deaths of males were 38.9 per cent., and of females, 40 per cent.

Attention has been called by Woolston and Conley[2] to the unfavorable effect of pregnancy on the prognosis. Since their data include approximately 100 pregnant women, it would seem that a female suffering from influenza uncomplicated by pregnancy has a chance of recovery equal to that of a male.

DURATION OF DISEASE

When a physician has exhausted all the means of physical diagnosis in attempting to judge the prognosis of a case, he finally consults the chart for the duration of the disease, before offering an opinion as to the ultimate outcome. With this idea in mind, the durations of sickness in both influenza and bronchopneumonia have been studied.

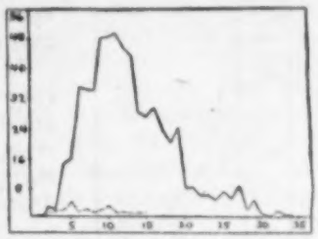

Chart 3.—Duration of influenza from onset until discharge from the hospital by recovery, or until death: solid line, influenza recoveries; broken line, deaths.

In bronchopneumonia, death (Chart 2) occurs as early as the third day. The maximum number is on the eighth day, from which point the decrease is rapid, until the sixteenth day. The level then gradually sinks to the twenty-eighth day.

Recoveries began on the fourth day and lasted through thirty-three days, with the peak of the curve on the sixteenth day, and a maximum extending from the eleventh to the twenty-fourth day.

Deaths from influenza (Chart 3) were due frequently to an attack terminating a chronic process (as myocarditis, emphysema or cirrhosis of the liver) or developing in the course of pregnancy. Their number is too small to be significant.

Recoveries from influenza begin on the third day, the maximum period ending on the twentieth day, with the high point of the curve on the thirteenth day.

A period of further morbidity of from seven to fourteen days must be added before the patient was fit to resume his daily routine. It is safe to say that the economic loss in these severe cases amounted to from three to six weeks.

In a person ill with bronchopneumonia, the chances of recovery computed in terms of days of duration may be thus expressed: from four to eight days, 7 per cent.; eleven days, 19; fifteen days, 45; twenty days, 70 per cent.

DURATION IN THE HOSPITAL

The duration of the patient in the hospital before death is shown in Chart 4. The high percentage of deaths within from twenty-four to seventy-two hours after entrance indicates that their condition was already hopeless before entrance. Unquestionably the strain, discomfort and exposure associated with the transfer of many cases to the hospital not only reduced their chances of living, but hastened the impending end.

CLINICAL PICTURE

In examining the histories, we hoped first to establish those features of primary and secondary constancy, and finally those less frequent but still of great academic interest, in showing the protean manifestations of the disease.

The primarily constant features were asthenia amounting usually to prostration; headache; muscle

pains chiefly located in the sacral region or the extremities, and cough or other evidences or respiratory irritation.

Those of secondary constancy were hemorrhages of some form: epistaxis, hemoptysis, which at times amounted to a pulmonary hemorrhage; bleeding from the gums; hematemesis; menorrhagia; metorrhagia, and hematuria; sore throat, not always a definite soreness, more frequently a dryness and irritation in the nose and throat, which presented on examination a dry, glairy, beefy red color; hoarseness; nasal discharge in infants; nausea and vomiting; cyanosis in adults, and pallor in children.

Less frequently there occurred pleuritic pain at the onset; abdominal pain; diarrhea; urinary retention; erythemas of various types, and deafness.

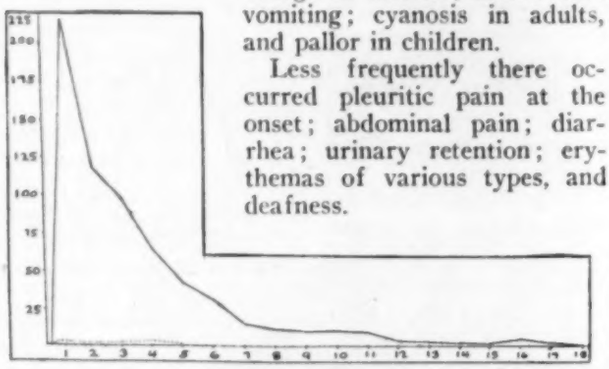

Chart 4.—Daily distribution of deaths with reference to the length of time in the hospital: solid line, bronchopneumonia; broken line, influenza.

The spleen was reported enlarged in only a very few cases. This may have been due to faulty observations, but we are inclined to think it a rather inconstant feature.

The onset was usually insidious, as outlined above. Less frequently it was so stormy that the patient could present with exact accuracy the details of its progress.

Blood Counts.—The exact relation of leukopenia to the disease is not clear in the textbooks. The physician busy with his daily practice has no data from which to formulate an expression of opinion. Our records showed 688 counts, of which an appreciable number were on the same patient on succeeding days. They were studied with reference to the duration of the disease, diagnosis of the cases, and the ultimate outcome as to life or death. The results are to be found in the accompanying table. The counts were tabulated for the day of sickness, and the percentages were computed from the number of counts on this day. The normal count was placed at from 7,000 to 9,000.

Influenza has a high (46.6) percentage of leukopenia in the early stages. With improvement, 24.3 per cent. of the counts were raised into a leukocytosis. During the whole period, more than half (62.2 per cent.) maintained a leukocytosis. The ranges of this leukocytosis lay between 9,000 and 15,000. Such an increase in the white count must be regarded as a favorable sign.

Bronchopneumonia.—In patients dying, the early counts (four days) showed a 50.1 per cent. leukopenia. If now the total counts in the normal and leukopenia column are contrasted in those recovering (53.7 per cent.) and those dying (65.4 per cent.), it will be seen that a balance of 11.7 per cent. exists in favor of the recoveries. Despite the occurrence of death, 22.3 per cent. of the counts were raised from a leukopenia or normal into a leukocytosis. The total average for the period showed no significant result. The lowest count was 900.

In patients recovering, the evident tendency to leukocytosis is shown throughout the course. This fact is more clearly seen when the succeeding counts are examined. The range of leukocytosis was found to be somewhat higher in this class of cases (from 15,000 to 20,000).

It may be concluded that even in the early stages of bronchopneumonia, a leukopenia points to a bad prognosis, and a maintenance of a low count cannot be looked on as other than a very serious symptom. In a few instances a drop was actually noted in the count on the day preceding death. This raises the question of the mechanism of the leukopenia. If it is a toxin that is stimulating negatively the hematopoietic organs, then the leukopenia in the milder cases may be taken to mean a persistence of unneutralized toxins. Crile[3] has called attention to a leukopenia as a diagnostic point in surgical shock. On such a basis, leukopenia developing terminally may be an expression of the more profound toxemic shock into which the patient is sinking.

Blood Pressure.—The blood pressures were taken in selected cases, one group presenting cyanosis with and without pulmonary edema, and another group with a high temperature presenting profound toxemia, but with no evidence of cardiovascular break.

Cyanosis is not an evidence of low blood pressure and does not bear any constant relation to it. Thus systolic pressures of 70, 85, 98 and 98 were recorded in patients who had no cyanosis. Even in the presence of pulmonary edema the pressure may be well maintained. Our records show pressures below 100 in sixteen cases, the majority of these being in the nineties; between 110 and 100 in eight cases, and above 110 in thirty-three cases. In fact, one is again impressed that a patient may maintain an apparently efficient blood pressure in the presence of a definite toxemic shock

BLOOD COUNTS

Duration	Leukocytosis	Normal	Leukopenia
Influenza, recoveries:			
Preceding maximum recoveries 5 days..	28.7	24.7	46.6
Maximum recovery period 6 to 18 days..	41.1	29.3	29.6
Total period	37.5	32.4	30.1
Bronchopneumonia, recoveries:			
Preceding maximum recoveries 6 days..	46.3	24.4	29.3
Maximum recoveries 7 to 18 days.....	70.6	11.3	18.1
Total for 18 days.....	62.2	16.1	21.6
Bronchopneumonia, deaths:			
Preceding maximum death period 4 days..	34.6	15.3	50.1
Maximum death period 5 to 18 days.....	56.9	8.2	34.9
Total for 18 days.....	41.3	13.5	45.2

or at least on the verge of such condition, and that the blood pressure is of little value in determining the breaking point of the cardiovascular system.

COMPLICATIONS

We shall enumerate rather briefly some complications encountered, and speak in detail of one of the more unusual findings.

Bronchopneumonia.—This may be considered as either the subject under discussion or its most important complication. The fact that these pneumonic areas were at the onset usually centrally located explains the

3. Crile, G. W.: Hemorrhage and Transfusion, New York, 1909, p. 75.

absence of pleuritic pain in the early stages of the disease. It was not until an extension of the consolidation involved the pleura that either pain or an effusion developed. The rather constant finding of fluid as reported by Nuzum and collaborators[1] in those patients dying early is simply an expression of the rapidity of the process. In our series, only twenty cases of pleuritic effusions were diagnosed and confirmed by paracentesis. Five of these patients later developed pus, and one a pyopneumothorax. In six other patients now convalescent, a diagnosis of thickened pleura has been verified by the fluoroscope and plates. It would seem, then, that the great majority run their courses without having the pneumonic process so situated as to involve the pleura.

Otitis Media.—This, the next most frequent complication, occurred in eighty cases.

Mastoiditis.—Three cases developed, one of which was associated with facial nerve paralysis terminating fatally. Two patients recovered.

Parotitis.—There were six cases, suppuration developing in one.

Meningismus.—Nineteen cases presented all the signs of meningeal irritation. The spinal fluid was negative except for the increased pressure.

Meningitis.—There was one case in which gram-positive cocci were present in the fluid. The patient died.

Ulcerative Stomatitis.—There was one case with death.

Cervical Adenitis.—There were two cases.

Peritonsillar Abscess, Disease of the Antrum, and Osteomyelitis of the Femur.—Of each of these there was one case.

Surgical Emphysema.—There was one case involving the neck tissues of undetermined etiology.

Diseases of the Heart.—Myocarditis with decompensation and recovery occurred in only one case. The unfavorable effect of the disease on previously established heart lesions was to be expected. Of twenty such patients, only three who were suffering from a mild influenza recovered.

Superficial Infections.—Small abscesses involving scalp, nose, axilla and sacral regions were noted. A tendency to development of bedsores was evident. The tip of the ear sloughed off following a puncture for a blood count in one case.

Psychoses.—The exact data involving the number of postinfluenzal psychoses from our series of cases is not available. Dr. F. M. Fowler states that there were thirty-three admissions to female wards of the psychopathic division of the hospital; the onset was from three to five days after an apparently established convalescence from a bronchopneumonia; the mortality was 15 per cent., and the duration was from twelve to fifteen days.

Acute Laryngeal Obstruction.—Of this there were six cases, in patients aged, respectively, 1 year, and 1½, 2, 4, 6 and 50 years. The condition developed in four cases at the height of the disease, in one case in convalescence, and in one case ten days after discharge. The symptoms were those of a typical obstruction: cyanosis, laryngeal stridor, retraction of the episternal notch and xiphoid process; and nonproductive and irritative cough, immediately relieved by intubation. Cultures from the throats, and intubation tubes were negative for diphtheria. Antitoxin was given in two of the first cases. Tracheotomy had to be performed eventually in all of the cases. From the tubes, large amounts of pus and serosanguineous mucus was obtained. Pathologic examination revealed an intense tracheobronchitis extending upward, involving the larynx with consequent edema. Death resulted in from eight to seventy-two hours in five of the cases. One patient survived and is still in the hospital.

DIAGNOSTIC DIFFICULTIES

Since the influenza cases were entered and handled through the contagious branch of the hospital, the problem of an accurate diagnosis carried with it a greater element of urgency than in most medical cases.

At the onset, typhoid was diagnosed in three cases that later proved to be influenza. Another case was seen by several of the attending men, who were divided in their opinions between miliary tuberculosis and influenza. Roentgenograms favored influenza. The outcome with recovery and the development of a complicating antrum established the diagnosis.

In fifteen cases these questions arose: Is it a pulmonary tuberculosis, on which an influenzal infection has been grafted? Is it a pneumonic phthisis? Is it a rapidly advancing tuberculosis without appreciable consolidations? In one of these fifteen cases the patient, a lad of 17 years, entered the hospital with a syndrome that made a diagnosis impossible. Roentgenograms of the chest furnished no conclusive evidence. Two blood cultures were positive for a staphylococcus. Improvement followed for a while; then a reappearance of the symptoms occurred. At this time the chest plates showed an unmistakable miliary tuberculosis. Meningitis terminated the course. Evidently an influenza had lighted up a healed or latent tuberculosis.

Lobar pneumonia was still being handled in the medical wards of the general hospital. Under what conditions were cases to be continued in medical wards as lobar pneumonia? With consolidation evident and a leukocytosis present, all cases presenting a history of sudden onset with chill and pleuritic pain were retained in medical wards as lobar pneumonia. The nasal discharge in the children resembled nasal diphtheria, while the erythemas were quite suggestive of scarlet fever.

Theoretically, pertussis in children and smallpox in adults before the appearance of skin eruptions might be mistaken for influenza.

TREATMENT

Before one can satisfy oneself that therapy is directed along rational lines, one must appreciate the mechanism of the perversion of the physiologic processes. Every one appreciated that in those dying, failure to continue life must be attributed to the exhaustion of the cardiovascular system. The cyanosis, the pulmonary edema, the weak second pulmonic sound, the enlarged, tender liver, increasing dyspnea, and the low blood pressure in certain cases were all evidence that the toxins were destroying the one vital function, the circulation.

During the past four years under the guidance of the Medical Research Committee of this country and Great Britain, the phenomena of shock have been clarified. The views as to its nature and the literature are completely given in two readily available articles by the

British Medical Research Committee[4] and by Cannon.[5] Briefly, shock may be precipitated by three classes of agents: surgery, trauma and toxins; but minor variations may exist in the picture, depending on the etiologic agent. Cannon speaks of shock as an "exemia." The blood pressure is a resultant of heart action, vasomotor control and blood volume. That the first two factors are not at fault has been abundantly demonstrated. The evidence for this view is stated by Mann.[6] That the blood volume factor is the important thing in surgical and traumatic shock has been shown by Cannon, and more recently by Mann.[7] Guthrie,[8] in studying one form of surgical shock, induced by excessive stimulation of nerves, was unable to confirm the results of other investigations that the quantity of blood fluid is reduced in the capillaries. On the contrary, he found some evidence of entrance of liquid into the blood. The rather difficult task experienced by other workers in inducing shock by this procedure raises the question of its identity as compared to that induced by other methods. Some difference of opinion exists as to whether this loss of blood from the available circulation is due to its accumulation in the veins or whether it has been lost by outflow into the tissues and lymph spaces through the capillary walls. The latter is the more probable view.

Dale and Laidlow[9] produced shock by the use of histamin, which is the amin of histidin, one of the building stones of the protein molecule. The conversion of amino-acids into amins is distinctly a type of bacterial activity, and can be reproduced in vitro. We may regard, therefore, that the toxins at work are akin in their activities to histamin. It was shown that at the low point of the blood pressure practically 50 per cent. of the blood plasma had been lost in the capillary region. The secondary results of this are slowing of the blood stream through the increased viscosity, and poor oxygenation of the tissues. Poor oxygenation of the tissues terminates in a condition of acidosis, through the accumulation of intermediate split products. The acidosis affects unfavorably the permeability of the capillary walls. The situation, then, is transudation of the plasma under the influence of the bacterial toxins, slowing of the blood, greater tax on the heart and vascular system, poor oxygenation, acidosis, more transudation, and so on ad infinitum.

Granted a severe infection, the problems of treatment are the prevention as far as possible of the shock state, and the treatment of the established state.

The one element in prevention that lends itself to ready therapeutic application is a dilution of the toxins. Those patients who were evidently prostrated, but were not in a shock state, and in whom sufficient nursing care was available, showed improvement, when fluids, in maximal quantities, were given. These were given by mouth, discontinuous rectal administration by the drip method, and hypodermoclysis. The rationale of the use of the alkalis had not appealed to us; so while we used them in this stage, we believe that the concentrations used were too small to show results. When shock developed, treatment was of little or no avail, but we wish to record certain measures which we feel may be of distinct harm.

Venesection.—In the cyanotic cases, some of the attending men believed that a venesection should be performed, followed by hypodermoclysis. This was advocated with the idea that a certain amount of toxin would be mechanically removed, and that probably relief might be furnished to the heart; so the parting word of advice given by them was to go carefully on the amount of fluids returned to the body. Theoretically the method should be valuable in removing some of the toxins; but instead of relieving the heart, it was only adding to its burden. For the heart was failing not because of excessive peripheral resistance but because there was not enough blood on which it might contract and maintain its coronary circulation. Venesection was performed in fourteen cases. Thirteen of the patients died, and the fourteenth is now suffering from a rather serious psychosis. One died during the operation, and in at least three others the condition was so changed that death occurred in an hour's time. This is exactly in line with the experience reported by those dealing with surgical shock, that even a small hemorrhage reduces the patient's chances of recovery.

Administration of fluids in this stage is difficult. By intravenous injection and hypodermoclysis the fluid may be introduced into the circulation, but it leaks out immediately through the capillaries. Rectal absorption fails in many cases. The water is expelled or distends the patient, adding to his difficulties.

Glucose Administration.—A series of cases has been reported by Litchfield[10] in which the patients were treated by intravenous injections of hypertonic glucose solution. In this work an occasional reaction was reported in which high temperatures with chill occurred. We gave a 10 per cent. glucose solution in two cases, and in each the temperature rose from a level which was only moderate to 107, and death followed in five hours. We were rather discouraged, for frankly at the time that the solution was given to one patient we felt that she had a chance of recovery by the more conservative methods of treatment. That such injections, even when practiced in a number of cases sufficiently large to rule out these so-called accidents, may be harmful is indicated by the findings of Mann[7] in a recent piece of work. He produced shock by tying off the venous return from the leg of an animal and allowing the arterial supply to remain intact. The animals went into shock after varying periods. If, now the ligatures were removed, the shock deepened instead of improving, his interpretation was that in the period of ischemia there had been formed certain products which, when thrown back into the circulation, were contributory factors in maintaining the shock. It is just possible that the glucose may wash into the efficient circulation a sufficient dose of toxic matabolites to act very injuriously.

Digitalis and atropin seemed to be the most efficient of the drugs used. The indications for digitalis would seem to lie in its action on the heart and in its power of transferring the blood from the venous to the arterial side.

Atropin relieved many patients of their cyanosis, and, we believed, increased the chances of recovery in those patients in whom it was used. The beneficial effect of atropin in large doses as shown in the epi-

4. Memorandum, British Medical Research Committee, Brit. Med. Jour., March 24, 1917.
5. Cannon, W. B.: A Consideration of the Nature of Wound Shock, The Journal A. M. A., March 2, 1918, p. 611.
6. Mann, F. C.: Bull. Johns Hopkins Hosp., 1914, **25**, 205.
7. Mann, F. C.: Am. Jour. Physiol., 1918, **47**, 231.
8. Guthrie, C. C.: The Blood in Shock, Arch. Int. Med., July, 1918, p. 1.
10. Litchfield, Lawrence: Glucose Intravenously as a Therapeutic Measeure, The Journal A. M. A., Aug. 17, 1918, p. 503.

demic at Great Lakes Naval Training Station has been reported by Ridge.[11] The only suggestion we have for its apparent value over pituitary solution lies in the well known experiment of Auer[12] in which he showed that atropin prevents death in guinea-pigs subjected to an anaphylactic shock by preventing the stenosis of the bronchioles. The cyanosis may be due to moderate narrowing of the bronchioles already filled with mucous secretion. That it is of value in beginning pulmonary edema is a matter of clinical experience. If it has an action on the permeability of the capillaries of the lungs, stopping the outward flow of fluid from the blood, it is no great stretch of analogy to transfer the same line of reasoning to all of the tissue capillaries of the body. Hence, it may be regarded as a drug that is acting at the site in which the perversion of the physiologic processes is occurring. In grosser terminology, it might be said to have more or less "specific" action in this class of cases.

CONCLUSIONS

1. The blood count early in influenza may show a leukopenia or normal count in over 50 per cent. of the cases, but with recovery this is changed to a leukocytosis of from 9,000 to 15,000.

2. The blood count in bronchopneumonia, in those recovering, shows early a very transient period of leukopenia; in those dying, a much higher percentage of leukopenias is found and a greater tendency to its persistence. A normal count or a leukocytosis may be changed to a terminal leukopenia in fatal cases. The range of leukocytosis lies between 15,000 and 20,000.

3. The blood pressure is no index of the state of the cardiovascular mechanism. Cyanosis bears no constant relation to blood pressure.

4. In the acute cases the patients are really suffering from a toxemic shock.

11. Ridge: Bull. Chicago Med. Soc., Oct. 12, 1918, p. 20.
12. Auer: Am. Jour. Physiol., 1910, **26**, 439.

Health in City and Country.—Commenting on and attempting to give reasons for the somewhat better showing of city men over country men in the recent military draft examinations, Dr. L. D. Bristol, state health commissioner of Maine, in an address before the Massachusetts School for Health Officers (May, 1918) thus summarizes the essentials of public health administration in rural districts: (1) a thorough study of rural sociology in general; (2) a special study of rural sociology based on the economic interests of the state in question; (3) public health education in rural districts leading to a definite demand for, and financial support of, an adequate local health organization; such education should be carried on by (*a*) the state department of health; (*b*) the rural schools; (*c*) the agricultural colleges. The latter should give required courses in hygiene and public health under the direction of thoroughly competent sanitarians, and should educate the rural population through extension courses in order to develop rural public health leadership. (4) As soon as possible, the establishment of health unions made up of two or more towns, for the employment of union health officers and nurses, who, in some manner, should be responsible to the state health organization. Towns or cities over a certain population which desire to employ their own full-time health officer should be exempt from the union plan. (5) The extension of all laboratory facilities for the state department of health so that through branch laboratories the rural districts might have close at hand all of the advantages of modern diagnostic and prophylactic methods. (6) Extension of federal and state financial aid* until such time as the local rural community can assume the entire financial responsibility.—*Bulletin of the State Department of Health of Maine.*

POSTCILIARY SCLERAL TREPHINING FOR ACUTE GLAUCOMA*

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As the several procedures in the case reported below have resulted in a blind eye, the material is offered only as a study in the intricate problem of glaucoma.

REPORT OF CASE

A healthy unmarried woman, aged 57, during the course of a stye two weeks before I saw her, noticed that her right pupil was large and that the vision was not so good as formerly. Since then she had been using physostigmin (eserin), prescribed by a physician, without relief.

July 18, 1917, in the left eye the tension as determined by the Schiötz tonometer was 20, and the vision $^{20}/_{20}$ with correction 1.75 spheric. There was a large, old retinochoroidal atrophic spot in the lower nasal portion of the fundus. The field was normal. In the right eye the tension with the Schiötz tonometer was 57, and the vision $^{5}/_{150}$. The cornea was steamy over the central portion. The pupil was 6 mm. in diameter. There was a shallow anterior chamber. Only a dim view could be obtained of the disk and vessels. There was a small, old retinochoroidal atrophic spot in the lower nasal portion of the fundus, and a larger one in the temporal portion of the fundus. The field was practically confined to the temporal half, and in this half was greatly restricted.

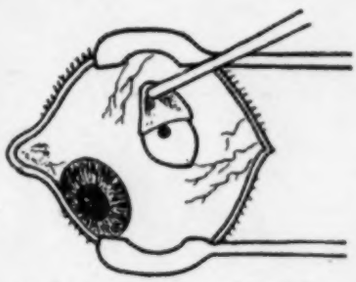

Fig. 1.—Postciliary scleral trephining for acute glaucoma: Location of the wound in the neutral region, midway between the superior and the external rectus muscles.

With the aid of physostigmin and pilocarpin the cornea and media cleared to the extent that arterial pulsation on the disk was readily observed and there was marked cupping of the disk, which seemed to be physiologic. Also the vision rose to $^{20}/_{30}$, but the pupil remained wide, 6 mm. in diameter, under repeated instillations of physostigmin. The nasal examination by Dr. Sluder showed a general chronic atrophic rhinitis of low grade. The blood pressure was 140, systolic.

July 25, as there was no evidence of permanent improvement, a postciliary scleral trephining was performed in the upper temporal portion of the globe 7 mm. from the corneal margin, the operation being one that has already been described,[1] a diagram of which is here reproduced (Fig. 1). In this procedure the eye is first anesthetized with holocain, 1 per cent., and cocain, 5 per cent., and a minim of 1 per cent. cocain solution is then injected hypodermically at the site of the intended opening in the sclera. After from three to five minutes an 8 to 10 mm. conjunctival flap is raised from below and the wound is located at the center of the base of this flap, which is placed preferably in the neutral region, either between the external rectus and the superior rectus, or between the external rectus and the inferior rectus muscles. The flap may be dissected from the sclera over its whole area, or the conjunctiva may be dissected to Tenon's fascia only as far as to the base of the flap, and here with scissors it may be cut through the fascia to the sclera at the site of the wound to be trephined. It has seemed that better drainage was obtained by the last method.

In this particular case the entire flap was dissected through to the sclera, and with a 2 mm. trephine the sclera was then

* Read before the Section on Ophthalmology at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. Ewing, A. E.: Am. Jour. Ophth., July, 1917.

trephined through the choroid, 7 mm. from the corneal margin. This membrane bulged into the wound but did not rupture. The conjunctival flap was then replaced by means of a suture at the apex, and the eye was cleansed with physiologic sodium chlorid solution and bandaged. Following the operation there was no appreciable reduction in the tension, as determined by palpation with the fingers. The operation was practically painless, and there was no subsequent pain. At the time of the first dressing, forty-eight hours later, the globe was very quiet, the cornea clearer than at the time of the operation, the pupil round and central and 7.5 mm. wide, there was a good reflex from all portions of the fundus; there were no details. Vision was reduced to fingers at 1 foot, eccentric to the right. There was no appreciable change in the tension of the globe, but the patient remarked that the eye was "more comfortable than it had been in three weeks," because it had felt as if the globe was "too large for the socket." This discomfort had ceased. Under the constant use of physostigmin, 0.5 per cent., the vision returned to 20/60, eccentric to the right, during the succeeding four weeks, and the field was somewhat reduced in size. There was marked protrusion of the conjunctiva over the trephined area, and the opening in the sclera was readily seen through the conjunctiva and shown to be clear by transmitted light.

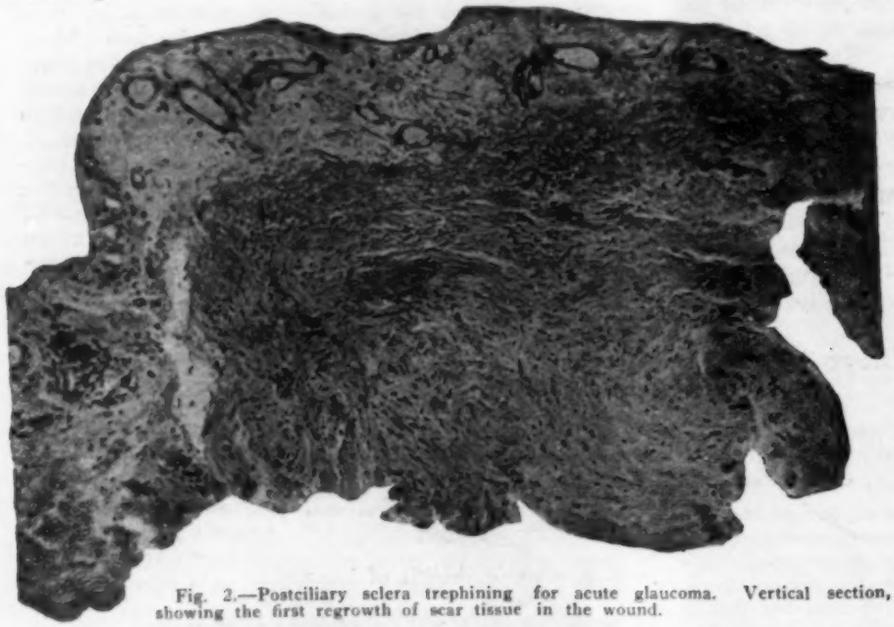

Fig. 2.—Postciliary sclera trephining for acute glaucoma. Vertical section, showing the first regrowth of scar tissue in the wound.

September 19, the tension was 60 mm. of mercury by the Schiötz tonometer. September 24 it was 55; there was no discomfort; the media were clear; there was marked arterial pulsation on the disk. Vision was 20/120, eccentric to the right.

September 25, I raised a conjunctival flap over the trephined area and discovered that the apparent protrusion of the conjunctiva, which I supposed was a delicate cystic scar, actually consisted of dense tissue formed from the sclera, a vertical section of which is shown in Figure 2. It was removed by means of a Graefe knife on the flat in the plane of the sclera. It did not seem to be connected with the choroid, which was later slit open by the knife on the flat, also in a plane with the sclera, and this incision in the choroid was followed by three large drops of vitreous, which were removed in succession with the spatula until it ceased of itself to flow. This left the globe very soft.

September 26, the globe was soft; the media were clear; there was no arterial pulsation on the disk; there was a small, diffuse, nearly central retinal hemorrhage. Vision was fingers at 4 feet. The pupil was 6 mm. in diameter, not affected by physostigmin. During the following few days other small peripheral hemorrhages appeared in the retina and several minute adhesions of the pupillary margin to the lens became evident, yet there was no other indication of iritis and no cyclitis.

October 3, vision was 20/240, eccentric. Tension by the Schiötz tonometer was 9. The media were clear. There was no arterial pulsation on the disk. The globe was quiet. There was no tenderness on pressure.

Now follows the extremely interesting part of this experience, and it demonstrates that acute glaucoma is not cured by direct loss of vitreous. Also it demonstrates that glaucoma is dependent on the drainage of the aqueous, and that this drainage may be by way of the vitreous, provided it could be sufficiently maintained by this route.

October 5, the vision of the right eye was motion of the hand at 6 inches. Tension by the Schiötz tonometer was 51. The fundus details were very indistinct. Following the employment of physostigmin salicylate, 1:240, twice during the next three hours, vision became 20/150, and the media became sufficiently clear to detect marked arterial pulsation. This pulsation ceased after massage of the globe over the wound, the eyelids being closed, but without further improvement in the vision.

October 7, vision was 5/150. The globe was hard, and there was marked conjunctival protrusion at the site of the wound. Incision through this was followed by a free flow of aqueous, no vitreous, and reduction of tension to below normal.

October 9, vision was 10/38. There was no arterial pulsation on the disk, and there were no new hemorrhages.

October 10, the patient reported an uncomfortable night. The eye was painful, the globe hard, the disk blurred; there was a mere outline of the vessels. Vision was 3/96. The conjunctiva was distended at the site of the wound. I incised the distended bleb with a sickle needle. One hour later, vision was 10/48, the media were clear; there was a clear view of the disk and vessels. There was no arterial pulsation, the globe was soft, and there were no fresh hemorrhages.

October 11 and 12, vision was 10/38, the media were clear, and there was no arterial pulsation.

October 13, the patient felt severe pain for several hours. Tension was high. The disk was blurred. Vision was 5/75. The conjunctiva at the site of the wound was distended. Following incision there was free discharge of aqueous, no vitreous, and immediate relief from pain. Half an hour later, the media were clear. There were no new hemorrhages. Vision was 10/38.

October 15 the condition was similar. Incision was made with similar results.

October 17, vision was 1/192. Tension was high. The disk was indistinct. There was subconjunctival evacuation of aqueous from the site of the wound. Ten minutes later the tension was below normal. The media were clear. Vision was 10/48.

October 18 there was similar refilling of the globe. Incision was made with similar results.

October 22 and 23 there were repetitions of this.

October 29, vision was 10/192. I repeated the scleral trephining after partially elevating a thin conjunctival flap. The globe was quiet except in the region of the wound, where there was moderate conjunctival infiltration. On this account the dissection of the flap was difficult, as the conjunctiva was very friable. Following the removal of the trephined "button," there was a free flow of aqueous, no vitreous; suture was omitted. A reproduction of a vertical section through this trephined "button" is shown in Figure 3, and again demonstrates a firm fibrous scar.

November 1, vision was 10/38. Tension was normal. The media were clear. There was no arterial pulsation on the disk. There were no new hemorrhages.

November 7 the field was telescopic. Vision was 1/120. There was marked arterial pulsation. The media were clear. The conjunctiva over the wound was distended. Immediately following incision, the vision was 1/60.

After this, as the media remained clear, although the arterial pulsation on the disk returned, pilocarpin and physostigmin and massage were relied on for controlling the pulsation, which usually ceased temporarily with their employment.

Jan. 9, 1918, vision was reduced to hand movements at 1 foot. There was nothing to account for this change except the continued increased tension. The media were clear, there was arterial pulsation on the disk, and the globe was entirely quiet.

January 12, postciliary scleral trephining was performed with a 2.5 mm. trephine in the upper nasal portion of the globe. The scleral "button" split from the deeper portion of the sclera just as the choroid was approached. The remaining sclera was teased through to the choroid without rupture of the choroid over a space 1.5 mm. in diameter. The conjunctival flap was replaced by suture. There was no apparent relief to the tension. No pain followed the operation.

January 16, vision was 0. The media were clear, the globe quiet, there was moderate arterial pulsation, tension was as before operation, there was no choroidal reaction, and the eye was entirely comfortable.

February 23, although the globe was entirely quiet and comfortable, an incision was made in the wound first trephined to demonstrate whether any vision might return after so long an interval of blindness. The media were clear. There was moderate arterial pulsation on the disk. Tension by the Schiötz tonometer was 54. This incision was made first through the conjunctiva and then through a firm tissue protruding from the scleral wound. There was a free flow of aqueous, but no vitreous. Arterial pulsation on the disk ceased immediately. For the first time in this series of tappings of the globe there was a slight flow of dark pigmented fluid from the wound into the lower portion of the vitreous. This seemed to be a serous fluid stained with hematin or with pigment from the choroid or retina. It ceased immediately. Four hours later the arterial pulsation had become reestablished. There was no return of vision.

March 2, the globe was entirely quiet and comfortable, the pupil 6 mm. in diameter, the media clear, arterial pulsation on the disk, a small hemorrhage of the retina below the disk, a little floating exudate in the vitreous, and moderate conjunctival distention at the site of each trephined wound.

March 8, the fundus was quiet, the media clear, the globe entirely quiet and comfortable, the pupil 6 mm. wide, slight consensual response of pupil to light. Tension by the Schiötz tonometer 70, which was 13 mm. higher than before the several operations, moderate arterial pulsation on the disk, no change in the cupping of the disk, and the globe entirely quiet and comfortable. No medicines had been used during the last two weeks.

COMMENT

The case has ended unfavorably, and is unfavorable to this mode of treatment for acute glaucoma, if the condemnation of such treatment in the future is to be based on the result from one case. In my own hands cases just as favorable for operation, and even more favorable, have ended in the same way by methods considered generally as the best for glaucoma operations, namely, the iridectomy of von Graefe and sclerocorneal trephining. The experience here indicates that safety in glaucoma depends on the drainage. If drainage can be obtained by this method, it is safest of them all, because there is no danger to the lens.

The several procedures in the case demonstrate that:

1. The removal of vitreous in such quantity that the tension of the eye is far below normal is no more a cure for glaucoma than is the removal of the lens.

2. Drainage may be established by way of the vitreous chamber.

3. A trephined wound in the sclera is closed by newly formed fibrous tissue, in the same manner as a trephined wound at the sclerocorneal margin.

4. A trephined wound of the sclera in glaucoma is not a more dangerous wound than a wound in the sclerocorneal margin.

5. The clouding of the cornea and the vitreous, and the arterial glaucomatous pulsation on the disk, may be instantly relieved by drainage from the vitreous, with immediate restoration of vision.

6. The "full feeling" and the pain of acute glaucoma are relieved by sclerocorneal trephining, even though the choroid is not disturbed and there is no apparent lowering of the tension.

7. The lens is not affected by the operation.

8. Miotics are of as great value following the operation as before the operation.

Fig. 3.—Postciliary scleral trephining for acute glaucoma. Vertical section, showing the second regrowth of scar tissue in the wound.

9. A painful glaucomatous eye will become comfortable after postciliary scleral trephining without visible operative defect, and without material lowering of tension.

Query: What are the compensatory avenues in the circulation in an eye in which there was pain and marked blurring of the media with the tension at 57, to cause it to become entirely quiet and comfortable, media clear and no appreciable change in the cupping of the disk, with the tension at 70?

ABSTRACT OF DISCUSSION

DR. WILLIAM F. HARDY, St. Louis: Dr. Ewing stated that a wound in the sclera is not more dangerous than one at the corneoscleral margin. In my opinion it is less dangerous. Last summer I performed a number of operations through the sclera by various methods, to note the length of time such wounds stay open, and the manner in which they heal. It was found impossible to delay or prevent the scleral wounds

from healing; they healed very promptly no matter what method of operating was chosen. They remained patulous for possibly a week, after which they gradually filled in with dense fibrous tissue, and at the end of the month were completely healed. Dr. Ewing, therefore, has added evidence to the fact that posterior drainage operations are of temporary effect only, but are poor reeds to lean on for permanent effects in glaucoma.

Dr. Arthur E. Ewing, St. Louis: Since beginning this work about a year ago I have performed half a dozen of these operations in cases of chronic glaucoma, one a case with a tendency to iritis, and one a case of acute retinal separation. In each of the cases there is a protrusion at the site of the wound, a very large protrusion in a case in which a 3 mm. trephine was employed, too large to be sclera or newly formed scar tissue. In contradistinction to this, in the case with retinal separation, there was no protrusion at the site of the wound, the globe being subnormal in tension. The same condition obtained in the case of chronic glaucoma with a tendency to iritis, the tension of which was 40, but became subnormal after the operation and remained subnormal. This fact, that there is no distention without intraocular pressure, indicates that there must be some form of drainage.

TREATMENT OF NEURALGIA OF THE FIFTH NERVE BY INJECTION OF THE GASSERIAN GANGLION *

H. H. MARTIN, M.D.
SAVANNAH, GA.

The injection of the ganglion of Gasser through the foramen ovale for the relief of trigeminal neuralgia has passed beyond the experimental stage and will eventually supersede surgical extirpation of the ganglion, division of the sensory root, peripheral and

* Fig. 1.—Left side shows needle in correct insertion. Right shows stylet displaced outward by postmortem contraction of skin.

nerve trunk injection, and other more or less unsatisfactory procedures. The operation is, of course, a very delicate one and requires, in addition to thorough knowledge of the topography of the parts, some surgical skill and dexterity; the needle will necessarily pass very near to important blood vessels, principally the internal maxillary artery, which lies in close proximity to the inferior maxillary nerve in the sphenomaxillary fossa and sends a small meningeal branch through the foramen ovale.

Fig. 2.—Same as Figure 1 in profile.

If improperly directed, the needle may enter the foramen spinosum, the jugular foramen, or an anomalous foramen transmitting an emissary vein known as the foramen Civinini, occasionally found just below the foramen ovale. If the needle is passed too far through the foramen ovale, possible injury might occur to the cavernous sinus or even the internal carotid, both of which are in intimate relation with the ganglion. But all such accidents can be safely guarded against; and the procedure, though a formidable one, is not so formidable as the surgical extirpation of the ganglion, while the desirable results are equally good and the undesirable results, such as paralysis of other cranial nerves, weakness of the muscles of mastication, and neuroparalytic keratitis, are never so bad.

The history of this operation, like many others, is one of evolution, and dates back to 1903, when Schlosser, an ophthalmologist of Munich, discovered by chance that subcutaneous injections of alcohol in or about an offending nerve afforded prompt relief from pain.

This idea has been taken up and elaborated on by many investigators in France, England, Germany and America, including ophthalmologists, rhinologists, neurologists, general surgeons and others, until there has been evolved a very simple method of injecting the ganglion of Gasser through the foramen ovale, which can be acquired by any one who will give sufficient time to experiments on the cadaver.

The indications for injection of the gasserian ganglion are the same as those for gasserectomy, namely, severe trifacial neuralgia, for which the cause cannot be discovered, or if discovered, cannot be removed. There are no serious contraindications; heart disease, high blood pressure, kidney lesion, etc., while increasing the seriousness of the situation, are not contra-

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

indications. Some measure for relief is necessary, and the injection is less dangerous than gasserectomy.

The finer distinctions between so-called essential neuralgia, postherpetic neuralgia, etc., have no place in this paper, which is limited to treatment; but I desire to say in passing that I do not believe that any of the procedures enumerated in the first paragraph of this paper will be of any benefit in a painful "tic" having its origin proximal to the ganglion of Gasser; on the contrary, those directed to the nerve trunks often aggravate the condition. The surgical or chemical destruction of the ganglion cells, however, will often give temporary relief from pain.

Therefore, given a case of painful "tic," the question arises as to what is to be done. Internal medication, massage, radiotherapy and electrotherapy have all been tried in the balance and found wanting. We have remaining the destruction of the central ganglion or of the nerve branches either surgically or with chemical solutions. It is my opinion that surgical methods should be abandoned in favor of those based on the direct application of chemicals calculated to destroy either the ganglion cells or the conducting fibers, and of these, the former is to be preferred, because the ganglion cells are the more vulnerable, as shown by the immediate positiveness and longer endurance of the results. Of the chemical agents that have been employed for this purpose I may mention osmic acid, chromates, formaldehyd solution in glycerin, phenol (carbolic acid) or menthol, chloroform, ether, antipyrin, salicylates and quinin salts, all of

Fig. 3.—Right side shows needle in correct insertion with point in the ganglion. On the left side a wire has been passed through the needle and through left cerebrum with the idea of entering the lateral ventricle by this route to ascertain what structures might be injured.

which have been abandoned in favor of alcohol in various strengths (from 70 to 95 per cent.). Also there are various chemicals which will give a temporary analgesia and anesthesia as well without destruction of nerve tissue, the chief of these being, of course, the cocain group.

The trigeminal divides at the gasserian ganglion into three principal trunks, the ophthalmic, the superior maxillary and the inferior maxillary. The ophthalmic divides into three terminal branches, the superior max-

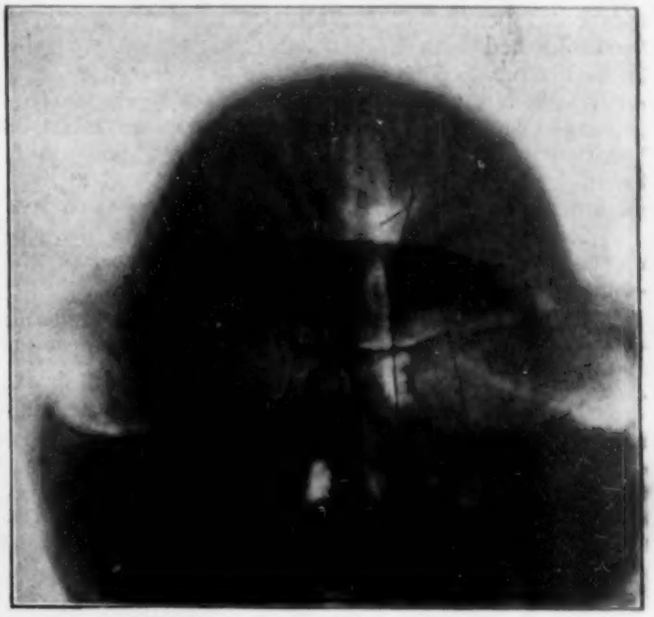

Fig. 4.—Same as Figure 3, front view. Note wire passing through posterior horn of left lateral ventricle and out at the vertex. So far as could be determined on the cadaver, no important structures would be endangered through entering the ventricle by this route. Right side shows point of needle resting in the ganglion.

illary into six, and the inferior maxillary into seven; all sensory excepting the latter, which is mixed, carrying motor fibers to the muscles of mastication.

In a recent paper, Sicard contends that alcohol nerve blocking treatment is adapted only to what he describes as essential neuralgia, differentiating thus: If the pain keeps up continuously, or if there is concomitant anesthesia of skin or mucosa, it is not essential neuralgia; or when the neuralgia comes on abruptly in all the three branches at once, or when other cranial nerves are involved and there are trismus, hemiatrophy of the tongue, etc. These forms of neuralgia are secondary, and injection of alcohol not only does no good but may even aggravate them. Hence it is necessary to have the patient examined by specialists in the nose, ear, eye and teeth, before assuming that a trigeminal neuralgia is of the essential type. Migraine must also be excluded, as also the neuralgia after herpes zoster. He warns us also against the neurasthenics.

I quite agree with this conclusion so far as it applies to injections into nerve trunks or branches; but injections into the central ganglion of the trigeminal system, or, better still, injection into the sensory root, has in my opinion a larger application than nerve blocking per se, and is a justifiable procedure in all cases of painful "tic" not otherwise relievable. I have never known of its doing serious harm when properly performed. There is always a very marked temporary relief, and it can be repeated ad libitum.

The technic of the injection is simple in the extreme, but ability to locate and enter the oval foramen can be acquired only by extensive and patient trials on the cadaver; but in every sense of the word it is eminently

satisfactory both as to the accuracy with which it can be accomplished and as to the results.

If pain is limited to the area supplied by the third branch only, the injection can to a certain extent be limited to this branch; but if the first or second branches are involved, the needle should be inserted into and through the corpus of the ganglion until the point has penetrated the sensory root. This can be accomplished with a reasonable degree of accuracy. It is my practice to attempt this in every case. The only serious consequence involved is a neuroparalytic keratitis which in my experience occurs in about 30 per cent. of all successful injections, but rarely involves the deeper layers of the cornea, and in most instances recovers in due time without injury to the eye.

Wilfred Harris of London, who is one of the pioneers of direct injection of the ganglion through the oval foramen, says:

When first I practiced injection of the foramen ovale on the dead body, I found, practically invariably, that when the needle point was placed within the nerve at the lips of the foramen, without pushing the needle through the foramen, injection of solution of methylene blue infiltrated the whole gasserian ganglion, the stain even surrounding the walls of the cavernous sinus, and even spreading down the anterior surface of the pons. Clinically I have thus injected the ganglion in scores of cases, anesthesia first appearing over the third division; and as more alcohol is injected, a few drops at a time, the anesthesia spreads over the second and first divisions until, after using from 1 to 1.5 c.c., the whole territory of the fifth nerve has become anesthetic. The patient indicates this spread of the alcohol by slight burning pain being felt around the eye and top of the head, and on testing with a pin there will be found total anesthesia to pin-prick and to pressure over the whole front of the head on one side, including the eyeball. If the alcohol has been slowly injected a few drops at a time, the anesthesia being tested after each injection, this total anesthesia will begin to fade away after a lapse of five or ten minutes from the first and second divisions, and an hour or so later, or the next day, there will be found slight analgesia on the forehead and cheek only, while total anesthesia persists over the third division.

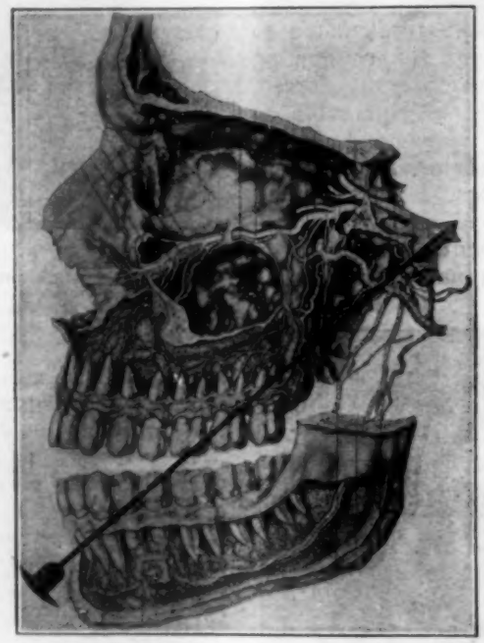

Fig. 5.—Schematic, showing needle point in sensory root.

It is important not to inject more than a few drops of the alcohol at a time, and to wait at least two minutes for testing the anesthesia on the forehead before pushing in any more alcohol. As soon as total anesthesia develops over the forehead and eyeball, there is a possibility that the damage to the ganglion cells may be so great that the total anesthesia does not evaporate, as is usually the case, though in the majority of cases as much as 0.5 c.c. of alcohol may be further injected after total anesthesia appears, without risk of its being permanent. When a total of more than 1.5 c.c. has been injected, this risk is a very real one, and if total anesthesia still persists half an hour after the injection, the eyelids should be closed by rubber plaster and a pad and bandage, in order to prevent the risk of keratitis developing, which is certain to appear on the following day if total anesthesia is still present. If, however, sensation is returning in the first division and pressure on the eyeball can be felt definitely, then the risk is past. When, however, the anesthesia is still complete on the following day, then it is practically certain to persist for weeks or months and the eyelids should be sewn up, leaving a chink at either canthus for washing out the palpebral cavity with saline. So long as the lids are kept closed, keratitis will not develop, and even a certain degree of keratitis which had developed, previous to the sewing up of the lids, will clear up. I have been forced to have this treatment adopted in seven patients whose ganglion I had injected. The cure of the neuralgia is, however, certain and likely to be permanent, though my first case of injection of the ganglion dates back only four years.

In many subjects it is possible to push the needle through the lips of the foramen ovale into the ganglion itself, though this is rarely necessary. A curious point, which I am unable to explain, is that after the ganglion injection, the anesthesia in the first division is more intense and more lasting than in the second or third divisions, a point which is peculiarly unfortunate, owing to its dependent keratitis.

I have incorporated this extensive quotation into my paper for two reasons: First, it clearly sets forth some essential facts regarding this procedure, and second, it embodies some conclusions with which I do not entirely agree. I do not agree, first, that the injection should begin at the lips of the foramen ovale and that it is rarely necessary to push the needle through the ganglion. This, in my opinion, is erroneous. The needle should not only be pushed through the ganglion but an attempt should be made to place the first 0.5 c.c. of the alcohol directly into the posterior root, injecting the remainder into the ganglion as the needle is withdrawn. Naturally if the alcohol is injected only at the lips of the foramen, the anesthesia in the first and second divisions would begin to fade away after a few minutes, because actually only the third division has been injected, the other two being temporarily affected by percolation of the injected fluid. If the patient is to have a permanent cure of the neuralgia, he must also be prepared to endure a more or less permanent anesthesia as well.

Secondly, I disagree with the suggestion that the eyelids should be sewed up. Never, never do that! If a neuroparalytic keratitis should occur, the eye must be suitably protected, and it should also have the benefit of daily cleansing with instillations of atropin and argyrol solutions.

The assertion that "so long as the lids are kept closed, keratitis will not develop" is also erroneous, keratitis often appearing during the first twenty-four hours, manifesting itself first as an epitheliál exfoliation usually directly at the apex of the cornea, although I have seen it in the lower segment.

TECHNIC OF THE OPERATION

The technic should in the first place be strictly surgical with the patient lying supine and under a general anesthetic. I have the skin of the entire face on the side to be injected cleansed, first with benzin followed by iodin and after a few minutes with alcohol. I then

study the contour of the face and head, getting a mental picture of the location of the foramen ovale (which is not by any means constant but varies in different individuals). The needle, which is 10 cm. long graduated up to 8 cm., is then with one deliberate thrust inserted into the sphenomaxillary fossa; at this time it is well to pass through the needle an obturator or stylet which serves several purposes: First, it extends a little beyond the point of the needle, rendering the needle point less sharp, thus limiting the chances of injury to blood vessels encountered. Secondly, it clears the lumen of the needle of any inpedimenta that may have been acquired during its passage through the cheek wall. Finally, it prevents obstruction of the needle during its further passage.

The needle is now advanced cautiously in the direction of the foramen as pictured in the mind of the operator, and if he is lucky, will often pass at the first thrust directly into the foramen without touching the bone at all. The operator will immediately recognize this fact by the sense of touch, if sufficient practice has been had on the cadaver. If bone is encountered, however, one must then ascertain the depth to which the needle has penetrated, and if this should be approximately 6 cm., the point is in the neighborhood of the foramen. If, on the other hand, it should be less than 6 cm., the point is above the foramen, and if more than 6 cm., the point is below the foramen. Gentle manipulation, with the topography well in mind, will usually place the point in the foramen without having to withdraw and reinsert the needle.

When one finds the needle in the foramen, it is well to pause and again study the contour of the face and head, not neglecting to slide the skin of the face upward on the needle where it has suffered slight depression or dimpling from the passage of the needle. This should show a penetration of about 6.5 cm. A firm hold on the needle is taken and it is advanced until the 8 cm. mark is almost reached or until a certain fibrous resistance is encountered, which indicates that the dura has been reached and consequently the insertion is too deep. In this case, the needle is slightly withdrawn, leaving the point as nearly as possible resting in the sensory root; the stylet is now withdrawn and the operator waits a moment, carefully observing whether either cerebrospinal fluid or blood should well up through the needle. In the former case, the point is within the dura and should be slightly withdrawn before the injection is made; in the latter case, the point is within the lumen of a blood vessel and the injection must not be attempted until the operator is absolutely sure that this position has been corrected, as very disastrous results have been reported from the injection of alcohol into a blood vessel, among them, gangrenous necrosis of the palatal bone with sequestrums. However, this is an unpardonable error and should never occur.

I always inject preliminary to the alcohol, 5 to 10 minims of a 0.5 per cent. solution of cocain or a 2 per cent. solution of procain. This is done for the purpose of inducing temporary anesthesia in the area supplied by the fifth nerve, in order that the patient may not suffer from the great burning pain caused by the action of the alcohol after recovery from the anesthetic. To complete the operation, 2 c.c. of 95 per cent. alcohol are now drawn into the syringe, half of which is injected in or near the posterior root, the remainder being slowly distributed throughout the ganglion as the needle is withdrawn.

In case a general anesthetic is not used, the only modification of this procedure is preliminary injection of a local anesthetic into the skin and subcutaneous tissues of the cheek and again when the point of the needle reaches a depth of 6 cm., waiting in each instance from five to ten minutes for full effect. In order to accomplish this the stylet will, of course, have to be removed temporarily, but must in all instances be reinserted before the needle is farther advanced.

In some instances, as stated, the needle will find the foramen with astonishing ease, while again one will have to grope for it patiently and persistently. The point of entrance is usually about 2 cm. above and external to the corner of the mouth. The needle should closely graze the alveolar process of the upper jaw, passing between this surface and the ramus of the lower jaw. With the patient supine and the head bent backward at an angle of about 30 degrees, the direction is almost perpendicular; but if the head is held erect, the direction is about 15 degrees upward but will vary in different subjects.

In old persons who have neither teeth nor alveolar process in the upper jaw, the locating of the foramen is exceedingly difficult but not by any means impossible.

The immediate results of a deep injection, as advocated in this paper, are anesthesia of the entire area supplied by the fifth nerve, which persists for a variable time and in variable degrees, and an analgesia which in the great majority of cases will be permanent.

REPORT OF CASES

CASE 1.—A man, aged 23, was suffering from genuine unilateral neuralgia of the left side, which had existed for from one and one half to two years. The operation was classical; a few minims of procain solution in the skin and subcutaneous tissues produced perfect local anesthesia, and the needle passed through the cheek and sphenomaxillary fossa without pain. When the inferior maxillary nerve was reached, sharp pain was complained of, which was almost immediately relieved by a few minims of procain. The needle was then advanced 1 cm., and when pain was complained of, procain was again injected; when the needle was advanced another 0.5 cm. and procain injected, the patient at once remarked that he had a strange feeling in the eye, face and tongue. One c.c. of alcohol was then injected without pain, and the patient was found to have complete anesthesia of cornea, skin and mucous membranes supplied by the fifth nerve. This patient developed a neuroparalytic ulcer in the lower temporal quadrant of the cornea, which persisted for weeks. He would not remain in the hospital, but was seen once a week for two months. When discharged, the corneal ulcer had healed with only a slight opacity, as the ulceration had been very superficial, apparently no deeper than the corneal epithelium, and gave him no trouble at all. When last seen, three months after injection, there was practically total anesthesia of the entire area supplied by the fifth nerve, and no return of "tic."

CASE 2.—A woman in Dr. Horsley's service at the Memorial Hospital, Richmond, had been a victim of trigeminal neuralgia for years and had had numerous peripheral operations, including resections and nerve trunk injections. She complained that all of her injections had been exceedingly painful and of little benefit. She was suffering intensely when I first saw her, and would cry out if even a motion were made to touch her face. The entire distribution of the nerve was apparently involved, but the mandibular division seemed to be the most affected, this area being exquisitely sensitive. She would cry out if the floor were jarred or the bed brushed against, and, in short, presented a typical trigeminal

neuralgia. Incidentally, she had become a morphin habitué. The injection was done under ether anesthesia, and the patient was seen the next morning sitting up eating breakfast, free from pain, and has remained so ever since (four years). Furthermore, she was freed from the morphin habit and returned to her home a very happy woman.

Case 3.—A woman, aged 30, of a highly neurasthenic type, had suffered from painful "tic" on the left side for years, with occasional attacks on the right side. Nasal examination revealed constant contact of both middle turbinates with the septum. This was corrected without relief. She then visited Sluder and had an alcohol injection in the sphenopalatine ganglion on the left side without relief. Previous to this she had had divulsion of the supra-orbital and of the mandibular through their respective foramina. In the latter part of November, 1914, the left ganglion was injected with 1 c.c. of 95 per cent. alcohol with immediate relief from pain lasting four months. She had total anesthesia of the entire area with abducent paralysis on the left side, the latter persisting through a second injection of 2 c.c. of alcohol four months after the first one. The relief from the second injection lasted about the same length of time, when severe pain recurred in the mandibular branch.

Case 4.—A woman, aged about 60 was brought into the hospital suffering from tic douloureux on both sides, with spasmodic "tic" involving the muscles of mastication on the right side, the pain on this side being very great. Her history was that of long-standing trigeminal disorder on both sides. The ganglion on each side had been extirpated some years before by Cushing with considerable relief, but not a complete cure. On the right side numerous peripheral operations had been done without relief. The stump of the posterior root of the right ganglion was injected with 2 c.c. of 95 per cent. alcohol under ether anesthesia, with prompt relief from both spasmodic and painful "tic," which lasted about two and one-half years. A second injection was made in this case about four months ago with only moderate relief from pain, but curiously enough we had this time a slight exfoliation of corneal epithelium which did not occur after the first injection.

Case 5.—A man who had had excruciating pain for years came into the clinic of Dr. H. B. Dechard of Dallas, Texas. An injection was done under local anesthesia, and was classical, the needle entering the ganglion at once. However, when the alcohol was injected, the patient was greatly nauseated, and complained of sudden deafness, dizziness, etc. The immediate results were total analgesia, total anesthesia and partial paralysis of the muscles of mastication which still persist (three years after operation). The only complication was a neuroparalytic keratitis, which ulcerated and did some damage to the eye, but from which the patient eventually recovered.

About this time my work was interrupted by a serious automobile accident which forced me to remain idle for two years. My sixth patient, therefore, was not seen until January of this year.

Case 6.—A woman was sent to me by Hillard Wood with a history of long-continued painful "tic," with many futile attempts at relief. The injection was done under ether anesthesia, and the relief was prompt and apparently permanent. She had neuroparalytic keratitis which ulcerated and had not healed at last report (three months after operation). She also had abducent paralysis.

Case 7.—A woman was injected, March 13, 1918, under ether anesthesia. Relief was prompt and apparently permanent. She had slight exfoliation of the corneal epithelium, but no ulceration.

Each of these patients had herpetic ulceration of the lips, tongue and buccal mucous membrane on the injected side, which invariably disappeared within two weeks. All of the patients complained in a greater or lesser degree of the various paresthesias and isolated spots of hyperesthesia originally described by Haertel.

ABSTRACT OF DISCUSSION

Dr. Hugh T. Patrick, Chicago: From the pictures I gather that Dr. Martin uses the method of Haertel, independently worked out by a New Orleans surgeon whose name I forget, in both instances for purposes of local anesthesia. To use the method for neuralgia was a second thought. Like all other methods of deep injection it is uncertain. Owing to marked differences in size and shape of the skull, the foramen may be very difficult to find, and one never knows just where the point of his needle is. I have never used the Haertel method because of the inherent dangers, although I think it might be the operation of choice when simpler and safer methods have failed. The Harris method of injecting the ganglion I have used successfully several times, though in some heads it is impossible. In my opinion we are not prepared to say that injection of the ganglion or of the sensory root cures trifacial neuralgia. Personally, I believe that it does not, though, of course, it may give relief for five years or more.

After making more than 1,000 injections in several hundred patients my opinion is that if the patient is relatively young and in good physical condition, the radical operation should be done, provided it be done by a high-class surgeon with experience in this operation. For the very old and for those with grave organic disease one of the injection methods is indicated.

Dr. Joseph C. Beck, Chicago: I would like to take issue with Dr. Patrick on his last remark, that there is a question of choice between the radical operation or injection. I should say, first try the injection, no matter what the condition is, and then if that fails do the radical operation, because we always have time for that. Dr. Martin certainly has had a great deal of experience in injection of the foramen ovale and speaks with more authority than I can. I have a record of forty-seven injections of the foramen ovale—that is forty-seven times, not forty-seven cases. Three injections were successful, and two were successful by the radical operation—one just the cutting of the sensory root—as recently recommended by Fraser.

In regard to the stylet, I use the Sluder needle, with a wire in it. In feeling for the foramen I depend on the flat plate at the base of the skull. These landmarks of the teeth for direction are all well enough but, as Dr. Patrick said, heads differ, and we must feel for the foramen at the external pterygoid plate close to the base of the skull. You must also consider the amount of fat there is on the face. Some people have 3 inches of fat on their face. The roentgen ray will give much information as to just how far the malar bone protrudes. The malar bone will give quite a lot of information as to how far you should go, and it is well to have a roentgenogram. I have never encountered any cerebrospinal fluid in any case that I injected. I have gotton a few drops of blood from the needle, and, of course, there was no injection made in those cases at that time. Nothing was said about the spilling of a large amount of fluid and the effect on the neighboring nerves. The sixth nerve is very close and I have seen paresis of the abducens follow that lasted for two months after the injection of alcohol for tic douloureux. I have tried the Harris method in three cases, but the point I would like to make is, that in a case where we fail with injection the operation Dr. C. H. Frazier recently described is the operation of choice.

Dr. H. H. Martin, Savannah, Ga.: I want to take exception to nearly everything that Dr. Patrick has said. His entire argument falls down when he admits that he has never done this operation, has not seen it done, and is unwilling to attempt it. There is only one way to learn to do the operation and that is to do it many times on the cadaver. You must do it and keep on doing it until you have acquired sufficient skill to know just where the needle point is at all times. Often the needle will slip into the foramen with the most astonishing ease; but sometimes you will have to grope for it. I have only treated nine cases and out of the nine all but two have remained free from pain for four years. If that is not a cure, what is? Unfortunately, I met with an automobile accident in 1915, and my work was interrupted

for two years, which accounts for the hiatus in my case reports. In addition to the nine cases of genuine trifacial neuralgia I did a lot of injections in negro cases by paying them two dollars for the privilege. I also tried cocain injections into the ganglion for operating on alveolar abscesses and other local conditions, and in that way I got a whole lot of practice on living subjects. I think this operation is much more simple and safe than anything else that has been devised. I thank Dr. Patrick for telling me whose method I use, for I did not know, Haertel originally entered through the mouth, but later adopted the technic described in this paper. I think it is much more satisfactory to use a needle with the markings on the needle rather than on the slide. I use a needle of sufficient diameter that the markings can be made with safety. I use 2 c.c. of alcohol, diffusing a portion in and around the sensory root of the nerve and the balance in the corpus of the ganglion as the needle is withdrawn.

Military Medicine and Surgery

THE ROENTGENOLOGIC STUDY OF EMPYEMA CAVITIES

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The surgical treatment of chronic empyema cavities and sinuses should be guided by two laboratory methods: The first, which is relatively the most important, is the bacteriologic examination of the discharge, and the second is a careful roentgenologic study of the existing pneumothorax. A proper correlation of these findings is necessary, however, to obtain satisfactory results; even though the bacteriologic control guides the surgeon in the correct use of neutral solution of chlorinated soda (Dakin's solution) and indicates that the cavity is sufficiently sterile either to allow healing or to permit a radical operation, the knowledge obtained by means of the roentgen ray is an absolute essential. It not only detects abnormalities in the lung tissue, but also demonstrates the size, shape and location of the draining cavity and affords some knowledge of the walls that surround it. This can be accomplished, however, only by a carefully standardized technic which is an accurate means of diagnosis and is at no time detrimental to the patient.

Fig. 1 (Patient V. C.).—Injection of bismuth paste with incomplete filling of a chronic empyema cavity.

It is obvious that stereoscopic plates are needed to locate points within the chest; but the interpretation of the various densities in a draining empyema is a far more difficult problem. Simple large cavities bounded by lung and axillary thoracic wall are easily outlined because the bronchi and their branches, thickened by long continued inflammation, can be sharply traced to the lung border. In cavities of bizarre shape with ramifications between and around the lobes, the delineation is much more difficult and can be accomplished only by completely filling the cavity with some substance opaque to the roentgen ray. A probe may be inserted and either observed in position or withdrawn and measured to estimate the depth of the sinus, but lateral measurements cannot easily be demonstrated in this way. The most practical method is the introduction of either a solution or paste containing some metal or alkaline earth, either as a salt or as a finely divided suspension. Various combinations of these salts and excipients have been used and their technical defects studied.

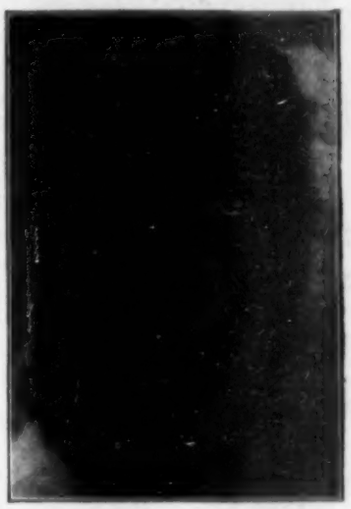

Fig. 2 (Patient V. C.).—Cavity filled with thorium nitrate solution, showing the exact size.

There is no one method that satisfies every requirement. Combinations of petrolatum and waxes as a carrying medium, especially when employed with bismuth, offer such mechanical disadvantages and are attended with such danger to the patient that they should be abandoned for diagnostic purposes. Very frequently the extent and gravity of secondary operations are not indicated because the roentgen-ray injections show the cavities incompletely outlined. Even before this stage of the treatment, the partial filling of the cavity erroneously leads the surgeon to believe that the lung is expanding. This incomplete filling is due to the stiffness of the paste which, as it cools, prevents the escape of air from the deeper recesses of the cavity. In the warm semiliquid state the mass fills only the most dependent part, and if the patient is placed on the well side during the process of injection, only that part of the cavity lying near the vertebral column is filled. Another important objection to the use of bismuth paste is the difficulty encountered in removing it when tortuous sinuses and pockets have been injected, and it is in these cases particularly that chronic bismuth poisoning so frequently results. The injection of even a moderately heavy paste also requires so much pressure that it alters the outline of the cavity, causes pain, and probably impedes the reparative processes. These faults are remedied by the use of fluid mediums.

The solutions in common use are potassium iodid and thorium nitrate. While they are advantageous so far as the filling of the entire sinus or cavity is concerned, alarming results often occur from absorption when they are used in large cavities. Potassium iodid, although easily obtained and prepared, is very irritating, and the pain experienced by the patients prohibits its routine use. Thorium nitrate does not produce such a reaction; but even if chemically pure,

chills, fever and hematuria are frequently observed after large quantities have been used. As a result of these observations, it is evident that the proper material should be either a suspension of an insoluble substance or a colloid of some metal. Colloids are frequently difficult to prepare and lack certain advantages to be mentioned later. Although bismuth subnitrate is followed by harmful effects if left in the cavity indefinitely, these are eliminated if it can be removed promptly. To accomplish this end its use can be permitted only in suspension in a liquid medium of sufficient body to maintain its homogeneity for a reasonable length of time. Cottonseed oil, aside from its cheapness, has all these requisite qualities, and a sterile mixture of this oil with 20 per cent. bismuth subnitrate and 3 per cent. powdered acacia is found to meet all requirements.

Fig. 3 (Patient M. R. S.).—Bismuth paste injection only partially outlining the cavity.

The filling of an empyema cavity must be done with a knowledge of its general direction, as it is then possible to place the patient with the deepest point of the cavity in the most dependent position. The warm suspension of bismuth and oil is drawn into a sterile syringe and, without touching the wound at any time, is allowed to flow slowly down the walls of the cavity. This effects the gradual displacement of the air from the deeper parts. Since most of the resections have been done posteriorly, the patient is laid across the table with his head and body hanging down, supported by an attendant. The quantity is recorded and more is allowed to run in until air bubbles no longer escape and breathing causes an overflow. Plates taken at this time show the cavity well filled, but the opening through the chest wall is not demonstrated. To overcome this, the wound is tightly packed with narrow strips of gauze previously dipped in bismuth petrolatum paste and sterilized. The patient is carefully raised on the table face down, and the exposures can then be made without the loss of the mixture; the resulting shadow corresponds exactly to the cavity. As far as possible, all patients should be taken in the same position, so that the operator may become accustomed to the same chest markings. The head is turned to the left with the right cheek down; the hands are placed under the thighs with the elbows extending just off the edge of the table. In order that the cavity may not be abnormally distended, it is important that no pressure be used in the injection. Immediately after the first pair of plates is exposed, the tampon is removed, and when the bulk of the bismuth suspension has drained out, a second pair is taken with a thin film of bismuth still adherent over the cavity. This procedure gives an exact quantitative measurement of the contents, and in addition allows the study of the cavity as it exists when not injected. The study of the plates after these injections shows that the shadow is nearly as dense as that obtained with bismuth paste; but because of this density it is difficult to estimate the distance between the lung and the parietal pleura. With the bismuth oil injection, however, this disadvantage is overcome, because sufficient bismuth adheres to the walls in the second pair of plates so that an exact picture of the cavity in all its dimensions can be obtained.

Many injections were made with paste during a period of three months in the treatment of more than 100 cases. On closely viewing the plates at a later time it was discovered that many of them were very misleading. Most of the cavities had apparently decreased very much in size, but on careful examination the walls of the sinuses could be traced some distance beyond the shadow of the injected bismuth paste. Because of this discrepancy they were again roentgenographed with thorium, and as was expected, it was found that it was impossible to obtain a correct outline unless the cavities were completely filled. In practically every case in which the cavity was of any size or depth, the cubic contents were far in excess of that anticipated, and the roentgenograms even showed that it was unsafe to attempt to estimate the size and shape of these wounds unless they were completely filled. Some had been reported as "partially injected pneumothoraces," evidence which was of little value to the surgeon.

Figures 1 and 2 were made at intervals of four days and illustrate the marked discrepancy between a paste and liquid medium. The patient had a chill with marked hematuria for a few days following because of the thorium employed, and it was for this reason that an oil-bismuth suspension was substituted in all subsequent work.

Fig. 4 (Patient M. R. S.).—Cavity completely outlined with bismuth oil injection.

Figures 3, 4 and 5 were taken in a second case at an interval of four days. The paste has been forced along the vertebral portion of the cavity, and in the upper part there is a large irregularly shaped accumulation of air that has not escaped. The bismuth oil injection completely fills the wound, revealing a cavity so shallow that one can see through it with ease. In Figure 5, taken immediately after the oil was removed, the outline is still very definite, and stereoscopically the lung and pleura are found lying in close approximation.

There is no retention. With the knowledge that 30 c.c. of the mixture were required in this injection, a very definite idea of such a cavity is obtained.

An attempt was made to discover whether the presence of this fluid, even under no pressure, caused a distortion. A series of plates was made in the same manner as the three just mentioned. Those made with paste were obviously incorrect. On observing the sinuses filled with oil and bismuth it was noted that although they conformed to the curvature of the chest wall, many were abnormally far from the ribs. This is frequently observed in chests with a very thick parietal pleura. The third pair in each of the series illustrated the collapsed sinus after the oil had escaped. There was sufficient bismuth still adherent to give a definite outline, and the decrease in size was evident, demonstrating the slight distention of the cavity with the injected mass in place. Difficulty was experienced in securing photographs taken in the same position. Since the ventral prone position has been used in the oil injection, it was not always possible to select similar positions from among the previously injected bismuth plates.

Fig. 5 (Patient M. R. S.).—Cavity sharply outlined after the oil and bismuth have escaped.

Tax on Child Labor Suggested.—That an exorbitant tax should be levied on merchandise or any production of child labor as the only logical method of eliminating the evil was the chief point brought out in a rousing address by Owen R. Lovejoy, general secretary of the National Child Labor Commission, at the opening session of the fifty-first annual meeting of the Maryland State Teachers' Association, which convened, November 29, in Baltimore; while a federal, centralized educational system discussed by Dr. William Chandler Bagley, professor of education at the Teachers' College, Columbia University, also struck a responsive note among the hundreds of educators present. In view of the fact that the results of the recent selective draft classification and examinations disclosed that 750,000 persons, all male, were illiterate, Dr. Lovejoy laid stress on the fact that child labor is largely responsible for that deplorable condition. These figures do not include the illiterate females in this country. Although the issue has not yet been adopted by the association, Dr. Rozell Berryman, Baltimore, treasurer, said that it conformed with the unanimous view of the teachers, and that it will ultimately be adopted in the resolutions. This means that a concerted effort will be made to that end in having such tariffs and taxes apply. A national system of education as is in vogue in England and France was strongly advocated by Dr. Bagley, who declared that only in that way could any comprehensive and effective system be evolved.

THE EAR IN "STUNT" FLYING*

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Crashes that occur during "stunt" flying are usually the result of something having gone wrong with the pilot. Hence, it is a pertinent matter for medical investigation. Just what this something is, is not always clear. Poor judgment, a sense of bravado, carelessness, "stunting" at low altitudes, and sudden faintness are among the reasons generally offered in explanation of these accidents. Direct testimony of the pilot is not always available, since many of the crashes result fatally. Neither are pilots who have crashed and survived always able to give a clear and concise account or analysis of the causes of the accident.

Underlying them all, however, there runs a story of momentary loss of faculties, resulting in a manipulation of controls without deliberate judgment. Most accounts of crashes read, "The pilot went into a tail spin and failed to come out." The story of Lieut. J. M. M. is quite typical of those collected by this department. While flying, he went into a tail spin. This produced such overpowering dizziness that, not knowing what he was doing or why, he grabbed the "joy stick" and pushed it forcibly over and threw himself into another tail spin in the opposite direction. Before he could come out of this he crashed.

Fig. 1.—Base of skull from above, showing semicircular canals in situ.

So many of the accounts of crashes given by pilots who do survive emphasize dizziness (or vertigo) that the organ responsible for dizziness when an individual is whirled around, namely, the ear, was necessarily made the subject of investigation by the otologic

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department of the Medical Research Laboratory at Mineola. Experiments which involved the whirling of individuals point conclusively to the fact that stunt flying is essentially an ear problem.

By visualizing the position of the pilot as he is whirled in the various stunt evolutions, we found that

Fig. 2.—Three cardinal planes of vertigo: horizontal, frontal and sagittal.

by reproducing a similar whirling in the apparatus it was possible to simulate all the subjective effects of the actual stunt.

Lieut. J. F. D. (150 hours in the air) was placed in a certain position in the apparatus and whirled. He volunteered the information that his sensations were identical with those experienced when coming out of a tail spin. When placed in the apparatus in a certain different position and whirled, he stated that his sensations were those experienced when coming out of a tight spiral. Lieut. W. E. R., an experienced pilot, when placed in the apparatus in the same position as Lieut. D.'s first experiment, made the statement that his sensations were identical with those of his predecessor, saying, "That is exactly like coming out of a tail spin." When placed in another position and whirled, he said, "Now I feel like coming out of a loop." These facts were confirmed by similar experiments on other aviators.

Fig. 3.—Spinning nose dive.

Since being whirled in an aeroplane produces effects identical with those resulting from being whirled in a laboratory device, such as the turning chair, or other forms of apparatus designed for that purpose, we are furnished with an accurate and convenient means of studying the various vertigo effects of ear stimulation produced by evolutions in the air, and the deductions derived from this experimental stimulation are true and applicable to stunt flying. The facts gleaned were so exactly in accordance with our knowledge of the ear as a "motion-sensing mechanism" that they were simply corroborative of certain well known otologic principles. Now what are these established facts or principles?

1. In each ear we have three semicircular tubes, or canals, containing fluid, so placed that they are at right angles with one another (Fig. 1). Because of this arrangement, no change of position of the individual is possible without producing some movement of fluid in one or more of the canals. Movement of the fluid in these canals sends messages to the brain which are there interpreted as body movement. Hence, the ears constitute the motion-sensing organs of the body.

2. When an individual is whirled, be it in the laboratory or in an aeroplane, there is produced a circulation of this fluid in certain definite canals and planes. Now, if the turning is suddenly altered or stopped, or if the aeroplane comes out of a rotating maneuver, the fluid in the canals continues to move in its former plane by sheer force of its momentum. The circulation of the fluid by momentum is interpreted by the brain as body movement; but not being in accordance with fact, the body having ceased to revolve, it constitutes vertigo or dizziness, and is disturbing to the individual.

Labyrinthine vertigo, therefore, is a false sensation of motion similar to the visual illusion of motion observed when one is watching a moving train from the window of a stationary coach, both being unavoidable phenomena of normal special sense mechanisms which, however, the subject easily learns to disregard.

One must not fall into the error, however, of thinking that the lack of a normal ear mechanism would be

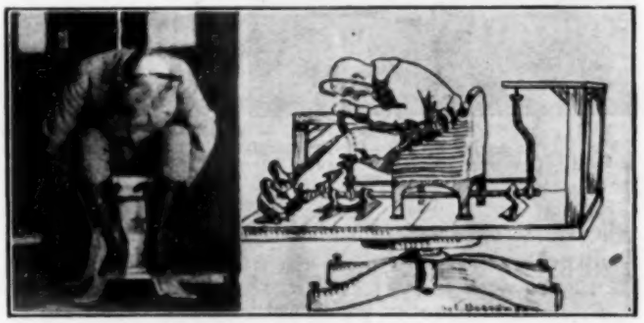

Fig. 4.—Position in turning chair to simulate spinning nose dive.

advantageous to the flier, because of the immunity to vertigo which this condition would confer. The absence of such an essential organ as a motion-perceiving apparatus is too great a handicap to the man traveling in an "air medium" to justify him even in thinking for a moment that he could dispense with it for the sole benefit of a vertigo immunity, especially since the normal individual can acquire such an immunity without much difficulty.

VERTIGO EFFECTS OF EAR STIMULATION LEARNED IN THE AIR

1. There are three cardinal planes of vertigo: horizontal, frontal and sagittal (Fig. 2).

2. A sense of being turned in a horizontal plane—horizontal vertigo—is less disturbing than a sense of being whirled in a vertical plane—vertical vertigo. Each semicircular canal, if stimulated, produces a vertigo in its own plane. Therefore, with the individual in an upright position, stimulation of the horizontal canal is much less disturbing than stimulation of the vertical canals.

3. When a disturbing or disabling vertigo is induced in the vertical semicircular canals, the effects can be greatly ameliorated by bringing the vertical canals in a horizontal position or plane, which can readily be done by bringing the head forward.

4. All types of vertigo, no matter how induced, are made less and less disturbing by continual repetition.

PRACTICAL APPLICATION OF VERTIGO STUDY TO STUNT FLYING

Let us consider how the knowledge of the various effects of vertigo gained in the laboratory can be correlated and applied to various stunts.

Spinning Nose Dive.—In this maneuver, the aviator, face downward, is whirled about an axis with his head and body practically parallel to the ground, as shown in Figure 3. In this position there is a stimulation of the vertical semicircular canals in a frontal plane, corresponding to turning in the chair in the position shown in Figure 4. When he "comes out" of the spin, the plane of vertigo which until now has been parallel to the ground becomes vertical in a frontal plane, that is, from side to side, so that instead of feeling that

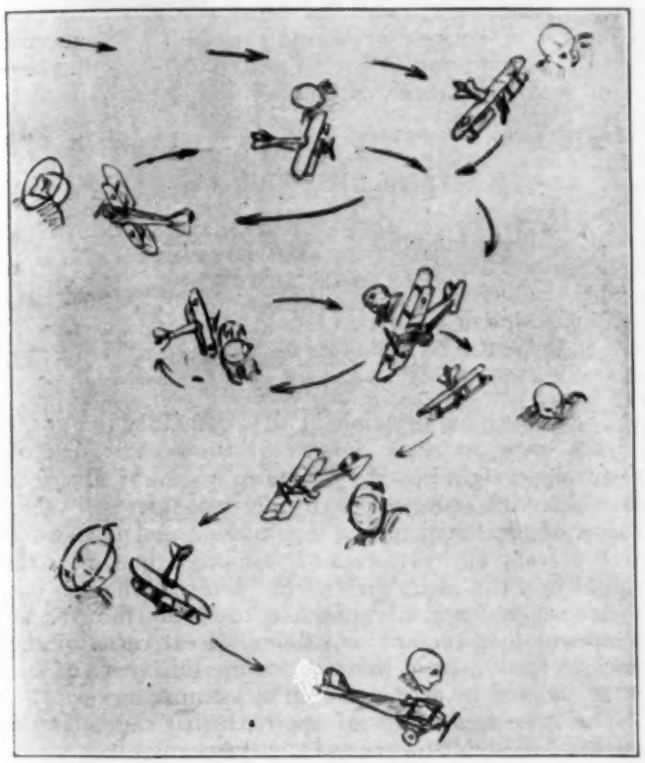

Fig. 5.—Tight spiral.

he is turning horizontally he feels that he is whirling in an up and down plane. This being very disturbing, he is apt to lose himself momentarily and attempt to correct this illusionary movement and so throw himself into another tail spin in the opposite direction. When the same experience is carried out in the chair, that is, when he is turning with his head forward simulating his position during the tail spin, and attempts to sit erect, he similarly changes the horizontal vertigo, with which he started, into a sensation of whirling in an up and down plane. In attempting to correct this false impression, he throws his body to one side or the other with such violence that unless caught by the examiner he would fall to the floor. It is easy to imagine what havoc would be raised with the controls of an aeroplane under similar conditions. The obvious remedy in both cases is to keep the head down as it was in the beginning so that the vertigo remains in the horizontal plane.

Tight Spiral.—In this maneuver (Fig. 5) the aviator is whirled about an axis with his head and body practically parallel with the ground but facing the horizon. The stimulation occurs in the vertical canals but in a

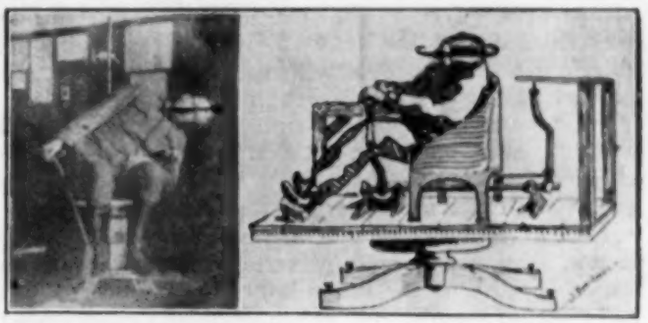

Fig. 6.—Position in turning chair to simulate tight spiral.

plane practically parallel with the ground as long as the spiral lasts. When he comes out, however, the plane of vertigo, horizontal until now, becomes vertical in a sagittal (from before backward) plane, so that he feels himself pitching forward or backward and may again meet disaster in attempting to correct for this illusion.

In the turning chair this maneuver can be simulated by turning the individual with his head sharply inclined over the shoulder (Fig. 6).

The obvious remedy for the aviator in this case is to tilt his head sharply to one side when coming out of the spiral, since by so doing he will prevent the vertigo from assuming an up and down whirl.

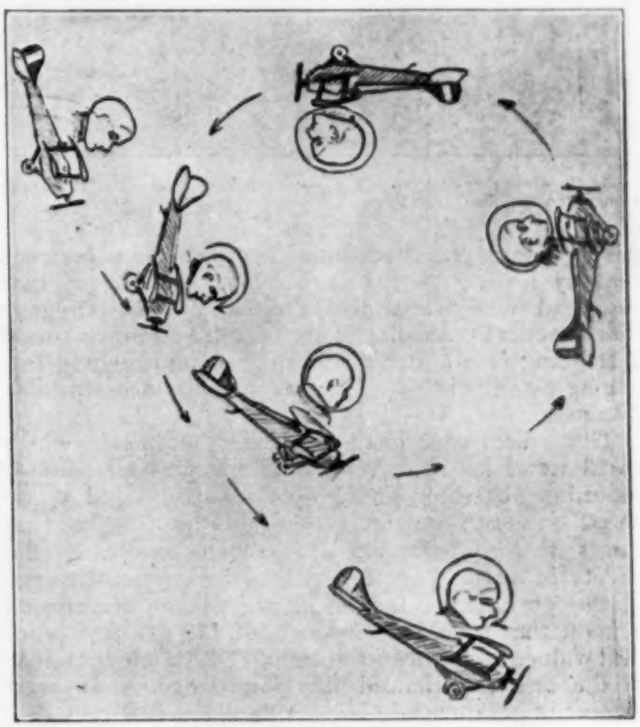

Fig. 7.—Loop.

Loop.—In this stunt, as shown in Figure 7, the vertical canals are stimulated in the sagittal plane (as in the spiral) but to a lesser degree. The correction is accomplished by tilting the head sharply over one shoulder (the position shown in Figure 6).

Immelmann Turn.—In this evolution, as shown in Figure 8, we have a compound maneuver. During the first or loop portion, the vertical canals are stimulated in the sagittal plane, followed in the second part by a stimulation of the vertical canals in the frontal plane. The effect of the first portion is lost during the remainder of the stunt, so that on emerging the aviator has only to deal with the vertigo induced by the last part, namely, the vertigo on the frontal plane. The obvious correction is to throw the head forward while "coming out." In a similar manner the vertigo induced by the "barrel roll," "falling leaf," "wing over," and other maneuvers can be readily analyzed.

It is, of course, true that the experienced stunt flier is not, as a rule, upset by vertigo induced by these stunts because of the many hours of practice he has had; but no matter how well trained and experienced he may be, he may occasionally find himself, especially in actual combat, doing whirling in a greater amount and at a greater rate of speed than his training has prepared him for, and an understanding of these principles might be the means of saving his life. As a matter of fact, stunt fliers develop instinctively certain maneuvers that neutralize the disabling effects of

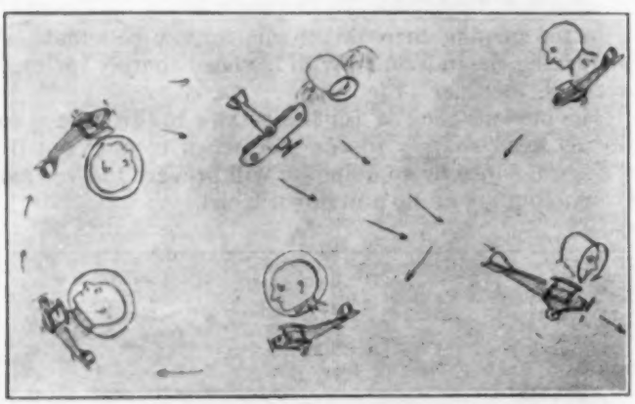

Fig. 8.—Immelmann turn. The circles indicate the plane of vertigo —sagittal first, then frontal.

vertigo; thus one flier found by practical experience that by leaning as far forward as possible, so that his head was practically inverted, a tail spin gave him practically no disabling vertigo. Another found that going into a straight nose dive immediately following a tail spin saved him from any uncomfortable dizziness.

These fliers have instinctively adopted means which at all times kept the vertigo in a horizontal plane—procedures based on sound otologic principles. Experienced aviators, on being put through the various stunts in the laboratory, when shown how easily the effects of vertigo are neutralized by certain changes in the position of the head, are of the unanimous opinion that such knowledge is of the greatest practical value, especially in stunting. It is obvious that to the less experienced this knowledge is of even greater importance.

The greatest usefulness of the knowledge that stunting is an ear problem lies in the fact that the flier may be educated to disregard the vertigo effects of his stunts in the laboratory instead of among the clouds, and without danger acquire a tolerance to evolutions to a degree impossible in the air. This can be accomplished by the use of an otologic apparatus known as the orientator. In its construction it is like the cockpit of an aeroplane suspended in concentric rings, after the manner of a ship's compass. The movements (or changes of position) which are possible in all directions except actual forward progression are governed by the individual seated in the machine, using a set of controls resembling those of an aeroplane. Strapped in this machine, he is enabled to execute any evolution, such as the loop, spiral, etc., at any desired speed for any number of turns and thus acquire in absolute safety a tolerance for the disturbing effects of vertigo induced by these evolutions, instead of acquiring this tolerance and knowledge by actual flying with its consequent crashes and possible loss of life. In addition, it will enable him to adapt himself to new and most unusual conditions. He will learn to orientate himself in new and rapidly changing positions of the body, and to perform properly the complicated acts necessary to control an aeroplane while flying with his head down, etc., which entails an entirely reversed relation to external objects, a condition in itself most disturbing and pregnant with possibilities of disaster.

STATIC DEFECTS OF THE FEET

A METHOD OF ACCURATE DIAGNOSIS AND A TREATMENT OF PROVED VALUE IN THE ARMY

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The underlying principle in all satisfactory treatment of the common static defects of the feet is that of restoring weight-bearing to those parts of the feet to which weight-bearing naturally belongs. All other forms of treatment of the longitudinal and transverse arch defects, all treatments of foot pronations or ankle valgus and the neuralgias of the forefoot that do not rigorously enforce this principle, are merely forms of treatment that support or palliate. Real cures of the static defects depend basically on establishment of the principle, first by artificial, then by natural, means.

There are two modes of approach that can be made use of to reestablish permanently the normal foot functions and the enforced use of the normal weight-bearing areas. First, there are the surgical and mechanical measures which in a valuable way make use of mechanics and force at efforts of reconstruction. These various procedures, valuable and important as they may be in civil practice, have little place in the present discussion. Early in the war, official orders rightly removed the knife from the hand of the orthopedic surgeon in the training camp. Second, there is that mode of approach which, recognizing the abnormality of the foot, determines on shoe alterations intended either to correct the statics of wrong weight-bearing or to render the normal shoe "abnormal" to compensate for the foot abnormality. The latter method is merely the forgotten aims of the old-fashioned horseshoer or the lost arts of the obsolete shoemaker. Further, several of the static foot defects, such as talipes valgus, are congenital affairs that tend to yield toward the normal on the application of the correct shoe mechanics. This paper is an attempt to emphasize the latter therapeutic phase.

To look at this mode of approach in a popular way: A certain shoe, properly selected, can be considered a normal covering for a normal foot. If a foot, however, is deformed, in the sense of being statically or organically abnormal, a standard or stock shoe does not "make a fit." *An abnormal foot demands an abnormal or nonstandard shoe.* Self-evident as the fact is, people have been crowding abnormal metatarsal defects, flat feet, cavus and pronated feet into normal store shoes. It is the same system as is the use of store spectacles or as would be the use of stock false teeth.

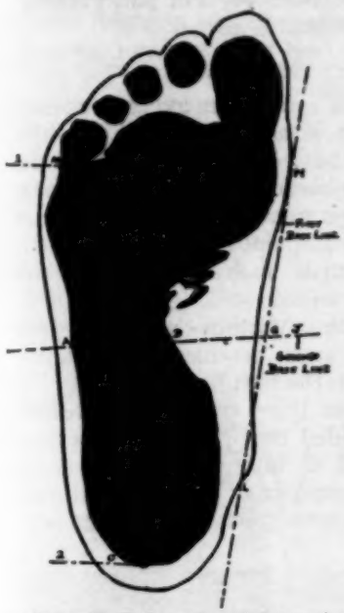

Fig. 1.—Pedograph of normal foot: Normal impression of weight-bearing area surrounded by contour line of the upper foot. First standard base line (*LM*) connects a fixed point posterior to the inner malleolus (*L*), and the metatarsal-phalangeal prominence (*M*). Second standard base line (*AG*) is drawn midway between Planes 1 and 2 and at right angles to the axis of the foot. Supplemental data: Feiss line, one-half inch; normal subcutaneous fat. This and the following illustrations were prepared by the Anatomical Art Department of the Army Medical Museum.

It does not seem feasible to revive shoemaking from individual lasts. However, to meet the great demand, the stock shoe has been a matter of long and careful study, with a view of remodeling. Civilian orthopedic surgeons and military boards have long given the matter of shoe alterations diligent attention, until today it can truthfully be said that the proper stock shoe can be so altered in its construction that it can be made to compensate for almost every abnormality common to the static defect.

ACCURATE DIAGNOSES OF STATIC FOOT DEFECTS

The diagnosis of the static foot defects has always been largely made by guess. Diagnostic aids have not been commonly sought or encouraged. Many surgeons, uninterested in the foot subjects, have jumped at conclusions from mere inspection, with the usual result that treatments applied have been misfits. To diagnose and classify the foot defects without graphic aids is exactly on a par with the attempt at diagnosis and classification of the chest derangements without a stethoscope.

It is a lamentable fact that great masses of soldiers appearing in military orthopedic clinics showing by pedograph an ankle valgus, popularly termed pronated foot, prove on accurate test to have cavus with often abnormally high longitudinal arches; but their histories show often that previous civilian treatment had for its aim the restoration of a fallen arch. There seems to be a vague misunderstanding of the characteristics of the static foot entities.

PEDOGRAPH AND SCAPHOID SCALE

Our two infallible aids in diagnosis are the pedograph and the arch scale for the scaphoid. The two are supplemental; neither is of much value of itself.

The pedograph is merely an imprint on paper of the weight-bearing surface of the feet, surrounded by a pencil mark of the contour of the upper foot (Fig. 1). The pencil so describing this contour line is aways held perpendicularly to the drawing paper (Fig 2). This impression of the weight-bearing areas of the feet, made in the standing position, with the weight equally distributed on the two feet, can be made in many ways. It can be taken with ink in the usual manner for finger prints. But by far the better way is to use the ingredients of ink in two separate solutions, first coating the plantar surface of the feet with an iron solution that scarcely stains the skin; making the impression (drawing in the foot contour), and then coating the impression with tannic acid, turning it in a few moments to a jet black. The solutions commonly in use are:

Iron Solution		Tannic Acid Solution	
Tincture of ferric chlorid	45	Tannic acid by weight	10
Glycerin	5	Commercial alcohol	90
Commercial alcohol	50		

The foot impression portrays in an unmistakable way several general facts other than those pertaining to the foot itself. There are portrayed general constitutional and assimilative data, indications of character of a positive and negative nature, and more important unerring lateral lines bespeaking station, motor disturbances and ataxias (Fig. 3).

The addition of two straight lines to the pedograph makes its interpretation very simple. First is the first base line (Fig. 1 *LM*), drawn with a ruler along the inner foot contour, connecting the point *L* or that position representing the point on the contour line immediately posterior to the inner malleolus, and the point *M*, a position on the same contour line registering the prominence of the metatarsal-great toe joint. (In the case of gross enlargements of this joint, allowance is made and the point *M* is assumed within the contour line.)

Fig. 2.—Perpendicularly drawn contour line of upper foot. "Travis block" is serviceable in maintaining a perpendicular while describing the contour line.

The next line added is the second base line. This line, *AJ*, is drawn at right angles to the axis of the foot, and in a plane half the distance from the base of the little toe (*N*) to the extension of the heel impression (*O*). The two base lines intersect at *G*.

SCAPHOID SCALE

The supplemental data for the proper interpretation of the pedograph pertain to the findings as to the actual height, by measurements of the lateral arch, as determined by the position of the lower border of the inner surface of the scaphoid bone. A line, sometimes called Feiss' line, is mapped out with a thin straight-edge, preferably a short machinist's rule, connecting the posterior inferior aspect of the internal malleolus and the distal end of the first metatarsal, plantar surface (Figs. 4 and 5). The scaphoid, which will be remembered as the keystone of the lateral arch of the foot, is found easily by continuing directly downward in the front line of the shin to a point in front of the inner malleolus. The lower rounded border of the scaphoid bone is carefully described by a mark on the skin while the patient stands bearing weight equally on the two feet. In normal feet this point on the scaphoid is about one-half inch below the line described. In all cases of cavus this point is found above the normal position, and is often to be found above the mapped outline. While in flatfoot, fallen longitudinal arches, the point may be 1 inch or 1½ inches below the line. When found, the position of the point on the scaphoid is thus placed on a corner of the pedograph: Feiss, ⅞; Feiss, 0; Feiss, —¼, etc.

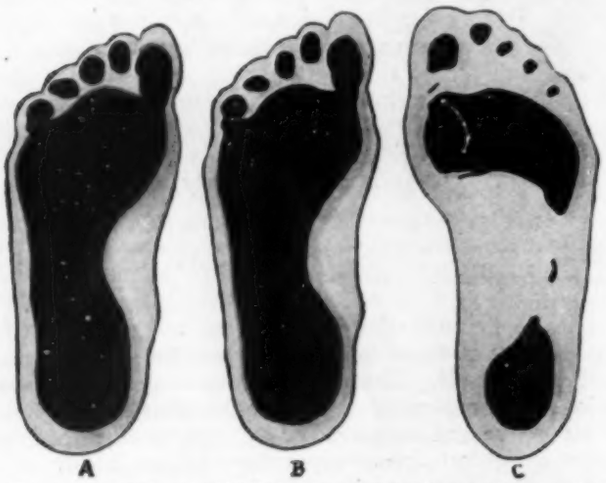

Fig. 3.—Postural and assimilative data recorded by pedograph: *A*, posture in alcoholic intoxication: forefoot blur; *B*, posture in ataxias: blur on lateral aspects of impression; *C*, impression in extreme emaciation: normal arch.

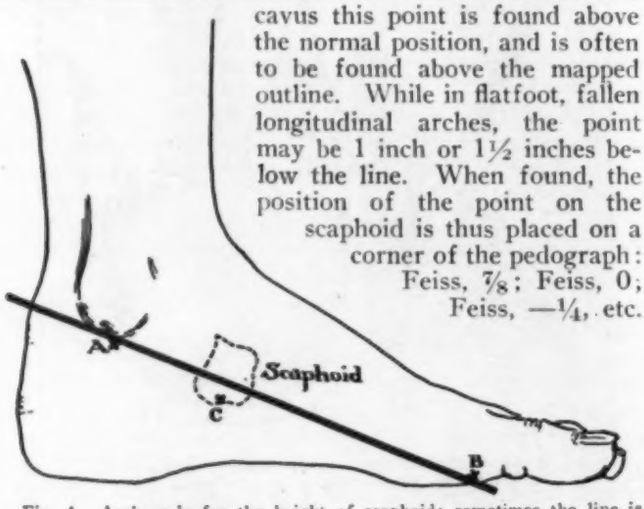

Fig. 4.—Arch scale for the height of scaphoid; sometimes the line is called the Feiss line. Normally the tubercle (*C*) should measure about one-half inch below the Feiss line.

Again in young persons a notation must be made as to the presence of the juvenile fat pad under the lateral arch, should such persist. Sometimes this fat pad does persist even into the thirties. Some individuals are abundantly blessed with very thick adipose tissue under this arch. It is true, as would be surmised, that fatty tissues deposited beneath the arch might make considerable change in the pedographic picture. They might even produce the picture of a severe flatfoot. Brief mention in such cases should be made on the pedograph in such notations as "Fat pad present" or "Thick adipose tissue present."

READING THE PEDOGRAPH

The Normal Foot.—It is found that average normal weight-bearing gives us an impression which in width extends along the second base line about one-half the distance from the outer border of the pedographic impression (*A*) to the intersection with the first base line at *G*, or from point *A* to point *D* (Figs. 1 and 6). Variations about one-fourth inch either way are normal.

Fallen Longitudinal Arch.—Various degrees of falling of the longitudinal arch produce pedographic impressions entirely over to the first base line (Fig. 7). Such would be extreme, or third degree. Therefore we have dogmatically divided that part of the second base line between *D* and *G* into three equal parts (*D-E; E-F; F-G*), and empirically we find that feet producing impressions widening out to the neighborhood of *E* fall into a class of first degree flatfoot (Fig. 8). In the same way we discover that feet producing impressions widening to point *F* fall into a class of second degree flatfoot. Then any impression extending beyond the point *F* classes the feet as having third degree flatfoot. It must always be remembered, however, that this picture of the widening of the plantar impression must be read with due attention to the findings that are recorded on the margins—the height of the scaphoid and fat findings. Further, attention must always be first directed toward pictorial signs of valgus at the ankle as recorded by the contour line of the foot, an important point to be taken up below (Figs. 2 and 13).

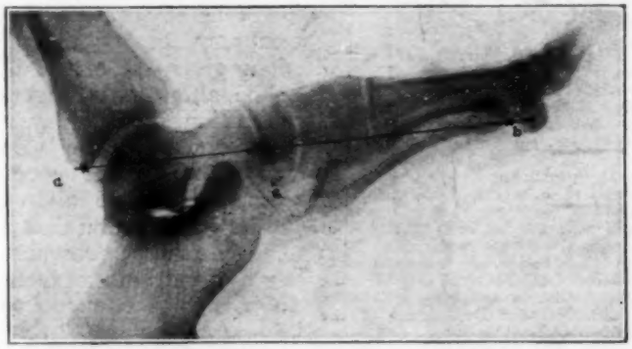

Fig. 5.—Same line as in Figure 4 drawn on roentgenogram.

Cavus, or Raised Longitudinal Arch.—In much the same way cavus is determined. When daylight can be seen beneath the weight-bearing foot we speak of third degree cavus (Fig. 9). So the space on the pedograph from *A* to *D* is divided also into three equal parts (*A-B; B-C; C-D*). Should a narrowed impression of a foot reach only to the point *C*, we would have a first degree cavus (Fig. 10). Should it reach only the neighborhood of point *B*, we would have second degree cavus (Fig. 11). And, as stated, with less impression still and light showing through, we have third degree cavus (Fig. 9).

Ankle Valgus and Some Considerations of the Contour Line.—Before considering that most common defect of ankle valgus, it will be necessary to premise with a statement or two regarding the contour line. This line records on the pedograph the integrity of the upper foot, the position of the main ankle and other tarsal joints on weight-bearing. The pencil making the contour line is always held perpendicularly. Contour lines are absolutely without value unless this standard position is maintained. To assist the worker, the Travis block is of great value. Figure 12 shows the level of the upper foot that the perpendicular pencil records as it encircles the foot, making the contour line.

Inspection of the pedograph of the normal foot reveals the fact that the inner contour line as it courses between the points *L* and *M* always passes entirely within, or to the impression side of the first base line, except where it bulges out around the inner malleolus (Figs. 1 and 6).

This inner contour line now assumes considerable importance.

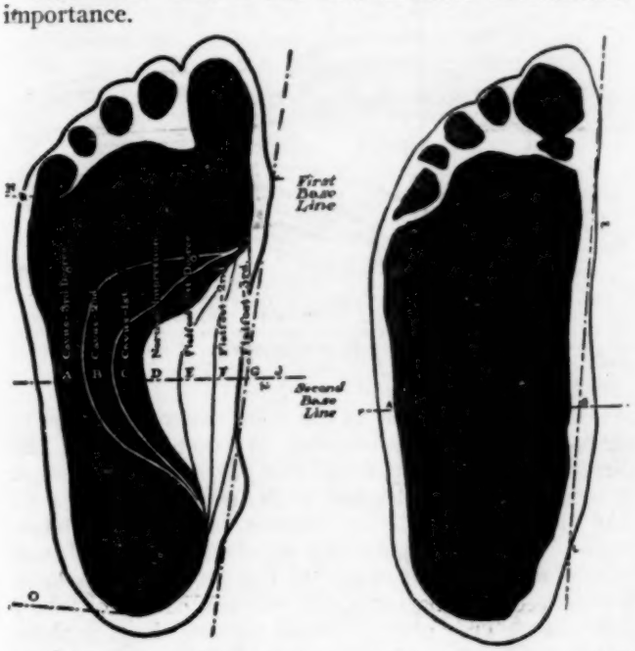

Fig. 6.—Scheme of pedograph interpretation: On second base line the point *D* (half the distance from *A* to *G*) marks the width of the normal impression. The space *AD* is subdivided into three sections to represent the impressions of the three degrees of cavus. The space *DG* is likewise subdivided to represent impressions of the three degrees of flatfoot.

Fig. 7.—Pedograph of third degree flatfoot (with pronation). Extreme falling of the longitudinal arch. Illustrates the common compound condition of flatfoot and ankle valgus, or foot pronation. Feiss line, 1⅝ inches. No fat pad.

As the foot pronates, or assumes a position of ankle valgus—a matter which, contrary to much didactic teaching, takes place largely in the astragalotibial joint—the inner contour line registering the statics of the upper foot falls farther and farther outward toward and often well outside the first base line. The extreme types of true ankle valgus give us a contour line a good half inch to the outside, at the plane of the second base line (*J*, Fig. 13). Such a type of valgus is of third degree. In first and second degree valgus, contour lines of less deviation are recorded (*H* and *I*, Fig. 13).

The term "ankle valgus" is used advisedly. "Genu valgus" and "hallux valgus" have their place in nomenclature, so it is logical and right to encourage "ankle valgus" for a homologous process at the ankle. As intimated above, some writers have advanced theories regarding the etiology of so-called pronation. It is asserted that most of the eversion of the foot takes

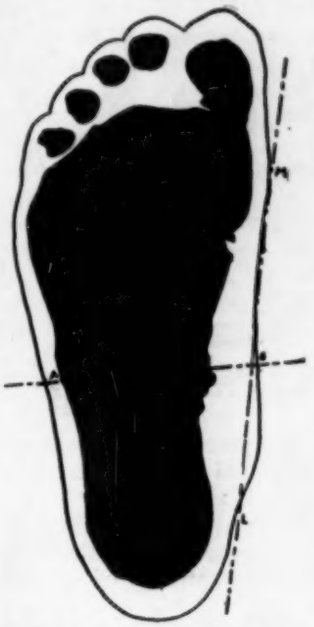

Fig. 8.—Pedograph of first degree flatfoot. Supplemental data: Feiss line, 1⅛ inches. Thick subcutaneous fat.

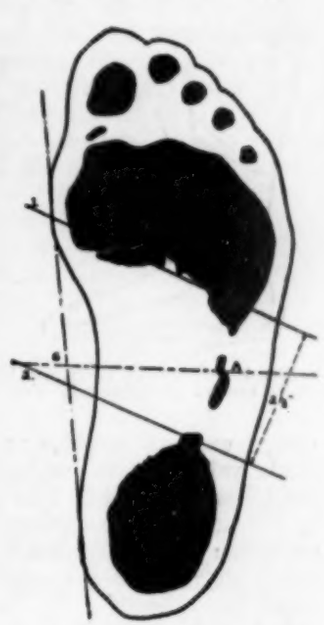

Fig. 9.—Pedograph of third degree cavus. Space of 2½ inches of nonweight-bearing between Planes 1 and 2. Feiss line, minus one-fourth inch.

place in certain minor tarsal joints. A previously described roentgenographic study of a hundred cases of ankle valgus in weight-bearing postures convinces me that fully 80 per cent. of the foot valgus is due to abnormal play in the main ankle joint. The causes for so large a percentage of ankle valgus among the statics of soldiers' feet is easily explained. First, one of the commonest defects in childhood is simple valgus—turning in of the ankle. As most of these cases are untreated, they persist. Again, the sprains of the ankle are most frequently injuries of the internal lateral

Fig. 10.—Pedograph of first degree cavus. Feiss line, 0. No fat pad.

Fig. 11.—Pedograph of second degree cavus. Feiss line, 0.

ligament. Ligamentous repair in so active a joint is often, and probably usually, incomplete, leaving as a sequela a tendency to valgus. Orthopedic surgeons who work intelligently on masses of soldiers in training

Fig. 12.—Planes of the upper foot recorded by the perpendicularly drawn contour line, shown by black markings on foot.

camps express surprise at the percentage of simple ankle valgus—with no longitudinal arch descent—to the cases of flatfoot. The ratio is as 5: 1½.

The pedograph furnishes truthful and accurate data on which to render scientific diagnosis. It is the best guide we have to the intelligent treatment of all the static foot defects.

RESTORING WEIGHT-BEARING WHERE IT BELONGS

We are now in a position to consider the matter of treatment by way of shoe alterations or adjustments as viewed by the discovered pathologic condition. Remembering our aim of restoring weight-bearing to those parts of the foot to which it belongs, let us first consider the most simple condition of cavus.

Fig. 13.—Ankle valgus, second degree. Feiss line, 1 inch. No fat present. Note that the inner contour line of the upper foot passes outside the first base line between *L* and *M*.

Cavus.—A third degree cavus gives us such a pedograph as Figure 9. In the center of the foot between Planes 1 and 2 of the figure there can be considered a normal weight-bearing area of several square inches in extent that is not, in the hollow foot wearing a common shoe, bearing any burden whatsoever. Such a cavus is often troublesome because of the shortened ligamentous plantar structures, and because the reduced weight-bearing areas of the dorsum must compensate and bear increased burdens of weight. This type of foot is exceedingly common among our Southern troops, especially from the delta states. Such a foot always is potentially a weak foot. Common shoes never fit it. Fortunately, however, they can easily be so altered that they will be made to fit—the shank and sole can be built up with leather until weight is again distributed evenly on the intended weight-bearing areas. This alteration, the insertion of the rocker shank (Fig. 14), is made by splitting the two layers of the shank and adjacent sole of the shoe, through and through, and the nailing in of a wide double wedge of leather of one or two thicknesses as needed, and of extent wide enough to span the arch of the cavus. The exact width is determined by measurements on the pedograph. As indicated in Figure 9, the approximate width of that particular rocker shank would be 2½ inches. If prepared rocker shanks are on hand, the alterations for a pair of shoes can be made in about eight minutes.

Alterations for Ankle Valgus.—With the same reasoning we approach the treatment of ankle valgus. The pedograph shows that in valgus the patient, instead of bearing weight on the usual planes *A-B-C* (Fig. 15), has shifted inward to some such new plane, as *D-E-F*. Contrary to teaching, the pedograph proves that ankle valgus or foot pronation is much more often a complication of hollow foot than it is of fallen arches. Often the arch is perfectly normal. The entire logic of treatment consists in constructing a solid—though

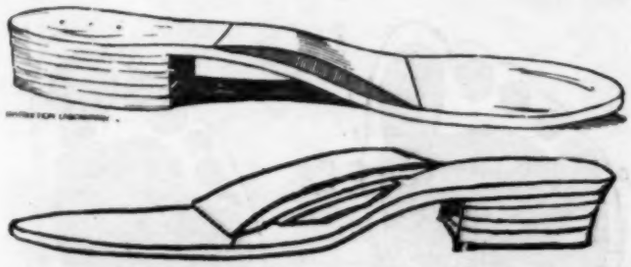

Fig. 14.—Position of rocker shank on the outer sole. The alteration for minor degrees of cavus. With more extreme types the rocker shank of two or more thicknesses of leather is demanded to redistribute weight-bearing. Lower illustration is diagrammatic of positions of leather inserts when multiple.

abnormal—foundation in the shoe under the deficient ankle so that weight-bearing is compulsory in the direction of the old plane *A-B-C*, or *where it belongs.* A wedged piece of leather in the shoe does the trick. The best means is the insertion of the tomahawk wedge. These wedges are long, narrow slips of sole leather of the shape shown in Figure 16, the common 8-inch wedge being adaptable for any of the ordinary shoe sizes. They are furnished the shoe shops in three different thicknesses. The receiving shoe is prepared by splitting the layers of the inner side of the sole and shank and separating the inner half of the heel with a cold-chisel. Then the tomahawk wedge is inserted into the sole, shank and heel of the shoe, and nailed in place in such a manner that it raises the entire inner border of the shoe—and greatly stiffens the shank—a point of tremendous importance (Fig. 17). In old cases of valgus, attempts at treatment must be graded. In all cases the beginner errs by forcing correction too fast.

Fig. 15.—General planes of weight-bearing; *A-B-C*, normal planes; *D-E-F*, planes in ankle valgus.

Alterations for Flatfoot.—Most all cases of flattening of the longitudinal arch are accompanied with pronation of the foot and abduction of the forefoot. It is probable that the pronation was the important factor in the descent of the arch. Hence the fundamental principle in treatment is first of all the same problem

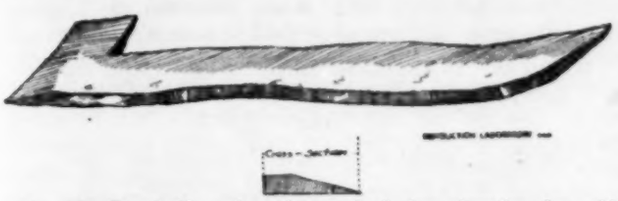

Fig. 16.—Tomahawk wedge, the standard shoe alteration for ankle valgus, to shift weight-bearing to the outer side of the foot; supplied in three thicknesses.

as in ankle valgus. The tomahawk wedge is inserted in the same way and for the same purpose. Sometimes extra wedges of leather are inserted in the sole with the wedge to correct further the abduction.

In flatfoot the desired results cannot often be forthcoming from shoe alterations alone. The adjuvant treatment that is reasonable and most profitable consists in various forms of forcible correction and some temporary means of support. Frequently at first the arch has to be forced up into some approach to its original position, and the best means is the Schapps lever or a simple piece of pine 2 by 2 inches and 20 inches long with the edges smoothed. The lever applied by a belt about its end and by means of a figure of 8 about the ankle and outer side of the foot exerts enough force against the padded fallen arch to bring about considerable correction (Fig. 18). No adhesive or plaster-of-Paris dressings are advisable. It is best to support the arch temporarily by some felt pad or padded insole (Fig. 19). The best and quickest results come from the patient repetition of forcible correction and the long persistence in the wedged shoe.

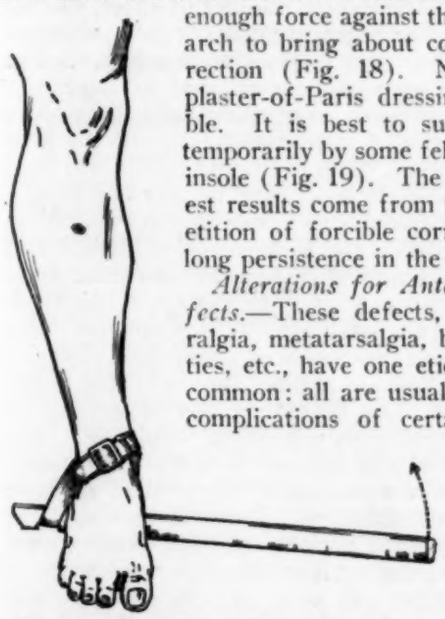

Fig. 18.—Application of Schapps lever for forcible correction of fallen longitudinal arch; protective towel and felt not shown.

Alterations for Anterior Arch Defects.—These defects, Morton's neuralgia, metatarsalgia, bunions, callosities, etc., have one etiologic factor in common: all are usually more or less complications of certain degrees of cavus or high arch.

Evidently Nature intended weight-bearing on the distal halves of the shafts, as well as the ends, of the five metatarsals, and did not intend to cast all the weight on the ends only of these metatarsals, Chinese foot fashion (Fig. 20 *A*). Naturally the higher the longitudinal arch of the foot the less weight there is borne on the metatarsal shafts, and the more on the phalangeal-metatarsal joints. Cavus in the foot breaks down the anterior arch, and secondarily produces the neuralgias and deformities.

The same general principle of restored weight-bearing pertains. First the proper shoe fitting is imperative. Then a shoe alteration known as the anterior heel (Fig. 20 *B*) is employed to restore the burden to these shafts. This anterior heel is a simple piece of leather about 1⅞ to 2⅜ inches wide and as long as the width of the sole of the shoe. This piece is inserted between the sole and shank of the shoe, and between the two layers of leather, obliquely, in such a fashion that it is anchored by nailing or sewing just posterior to the heads of the metatarsals (Fig. 21).

On account of the frequency of these defects, this anterior heel is probably the most useful single shoe alteration in use. It is the counterpart of the Jones cleat, but is much more serviceable and of better appearance. Parenthetically, the anterior heel is a narrow rocker shank applied to a cavus for restoring statics for terminal conditions. Some workers construct the anterior heel higher for the center of the sole than for the two sides. The application of this particular alteration is certainly most satisfactory.

Fig. 17.—The tomahawk wedge in place.

Combined Static Defects.—While each of the foregoing simple static defects has been taken up separately, it must be borne in mind that very frequently two or more defects are found present in the same foot. Ankle valgus and cavus are commonly found together; flatfoot is usually accompanied by valgus; metatarsalgia often complicates all the other defects, etc.

The treatment of such combinations of defects consists in the blending of the alterations for the individual conditions discovered.

Alterations for Short Heel Cords.—The final static foot defect of common Army occurrence is the short heel tendon. Such conditions are often found among ranchers who have always worn high heeled boots. The Army shoe in these cases must have enough leather lifts added to compensate for the shortened tendon.

Fig. 19.—Temporary felt supporting insole, for use after forcible correction of flatfoot. Any form of support should be discontinued after two or three weeks.

SUMMARY

Cavus of the first, second or third degree calls for a rocker shank, Size A, B or C.

Ankle valgus of the first, second or third degree calls for a tomahawk wedge, thin, medium or thick.

Flatfoot of the first or second degree calls for tomahawk wedges, thin, medium or thick; forcible correction; and temporary felt support.

Anterior arch defects, metatarsalgia, Morton's neuralgia and anterior callosities call for anterior heels, Size 1, 2 or 3. The width should be specified.

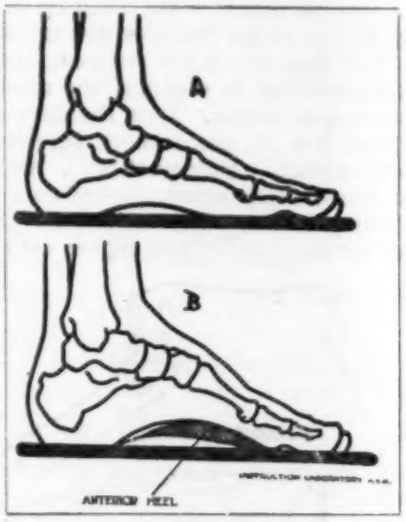

Fig. 20.—*A*, Normal foot; weight-bearing is transmitted to the metatarsals by the soft parts. *B*, hollow foot or cavus that always accompanies anterior arch defects; in this condition the introduction of the anterior heel to restore normal weight-bearing to the metatarsals is necessary.

CONCLUSION

The more experienced the worker in shoe alterations, the less adjuvant treatment usually is necessary to secure results. Mechanical care and skill are mightily important in every alteration, and the alteration is liable to fail with careless, indifferent workers. It must not be surmised that even the experienced do not have to change, raise, lower or alter the positions of their inserts. One of the oldest surgeons often has to revise his prescription as many as three or four times in difficult compound cases before hitting on the right combination. The novice, the careless and those not mechanically inclined do not achieve standard results.

Fig. 21.—Anterior heel in position. This shoe alteration is the most useful single alteration in use in the Army. It successfully meets almost all defects in the forefoot. It can be inserted between the layers of the soles of a pair of Army shoes in seven minutes; this includes individual adjustments.

Effects of Too Much Speed in Military Training.—For a certain period the reports from General Pershing's army showed that the highest mortality from communicable disease was in the National Army and the lowest in the Regular Army. Thus it has been calculated that for a certain period deaths per thousand from pneumonia in the National Army, the National Guard and the Regular Army were in the proportion of 5.65, 4.80, 4.09. I believe that the variation in susceptibility can be ascribed directly to the variation in time of preparation and development which these different units have enjoyed, the development of the National Army having been characterized by intensive training and high speed. I believe that the accumulation of fatigue substances from overtraining for lengthy periods without proper attention to the time element brought about, in the soldiers that I saw, a condition analogous to what we see in the stale athlete, and it is not to be wondered at that the overtrained soldier should be particularly liable to pneumonia, scarlet fever, influenza, etc.—Lieut. D. F. Luby, *Naval Medical Bulletin*, October, 1918.

THE EPIDEMIC OF PNEUMONIA FOLLOWING INFLUENZA AT CAMP LOGAN, TEXAS

PRELIMINARY REPORT

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During the period from Sept. 13 to Oct. 8, 1918, inclusive, there were admitted to the base hospital 2,487 cases of influenza, and 416 cases of pneumonia developed, practically all from the influenza cases. The pneumonia has differed in character so widely from the types reported elsewhere that a record seems to be advisable.

Clinically, the disease was lobar pneumonia in all but fifty cases. Generally on the second to the fourth day of the influenza the temperature rose, usually, to about 104, occasionally with a distinct chill. Flatness over one lower lobe, often over both, was found at the first examination. In about half the cases suppressed respiration was noted, but crepitant râles could be elicited in nearly all cases and sharp bronchophony in a considerable number, even from the time of the first examination. Of the whole number of cases, in only four did the disease begin in an upper lobe, although in many of the fatal ones it spread to that region. The flatness was the most pronounced that we have ever seen in acute pneumonia, suggesting fluid rather than consolidated lung, and it generally followed the lines of the lobes involved. The aspirating needle was used rather freely, but fluid was found in only one case.

Because of the frequency of empyema in the hospital during the past winter, and because Major Stone found a little fluid in the pleural cavities in the earlier cases examined postmortem, Capt. J. H. Brown, M. C., Capt. J. E. Cooke, M. C., and Capt. T. P. Caplinger were detailed to examine every case of pneumonia after the fifth day of the disease, and to continue daily examinations in those cases presenting any suggestion of fluid. Yet but few cases were even suspicious. The temperature curve was that of ordinary lobar pneumonia; the pulse rate was rather lower than we have generally observed; crisis was almost unknown. The disease subsided in the patients that recovered with a rather sharp lysis, and recovery has been uneventful.

Approximately 18 per cent. of the cases so far admitted have proved fatal, in general, by the seventh day. Cyanosis has been rather prominent in fatal cases, but not of such degree as in the hemolytic streptococcic bronchopneumonia seen last winter.

Nosebleed was rather frequent. Dry pleurisy, accompanied by much pain, but not with notable effusion, was often noted in the serious cases; delirium was present to such a degree that, for example, nine patients in one fifty-bed ward had to be constantly watched, during the height of the disease. The sputum was commonly red, but less glutinous than the typical pneumonic sputum. Cough was moderate in degree. One case of parotitis and three of phlebitis of the left leg occurred. A most unusual complication has been

noted in five cases, namely, the development of surgical emphysema about the root of the neck, spreading downward to the nipple line exactly as in severe whooping cough. We had two examples of this in the severe cough of measles last winter, but no one connected with the hospital had known of it in acute pneumonia. In none of these cases was the cough even moderately severe. Major Stone has suggested that the presence of this complication may be related to the fact that the only case of empyema so far discovered perforated into a bronchus on the seventh day of the disease, at a time when we were purposely delaying operation as advised in recent communications from the office of the Surgeon-General, and in accordance with the lessons of our own experience heretofore. He suggests that the infecting organism apparently damages the lung tissues in such a way as to render perforation by air or pus more frequent than usual.

The few cases of bronchopneumonia presented no especial feature of interest. The epidemic has produced a great number, approximately 10 per cent., of abortive cases of pneumonia. The dulness over a lower lobe in the back with suppressed respiration and crepitant râles, with the usual fever, led us in the early cases to transfer the patients to the pneumonia wards at once. The sudden drop in temperature with recession of all physical signs within twenty-four to forty-eight hours led us to reclassify such cases as abortive pneumonia. Yet in a few cases the physical signs persisted as usual after the subsidence of fever.

During the present epidemic of influenza and pneumonia, 302 sputums have been examined for type determination of pneumococcus and the presence of hemolytic streptococcus with these findings:

Pneumococcus Type I, 1; Type II, 12; Type III, 16; Type IV, 273; hemolytic streptococcus, none.

In nine cases that have come to necropsy, cultures have been made from the involved portion of the lungs, the pleural cavities, the heart blood and the pericardium, and the following organisms found:

Lungs: pneumococcus, 4; influenza bacillus, 1; hemolytic streptococcus, 1; no growth, 3.
Pleural cavities: pneumococcus, 6; sterile, 3.
Heart blood: pneumococcus, 3; sterile, 6.
Pericardium: sterile, 9.

Seventy-nine uncomplicated cases of influenza have been studied by smears and cultures from the throat and sputum, with the following organisms found in either throat or sputum:

Influenza bacillus, 58; pneumococcus, 76; *Micrococcus catarrhalis*, 39; hemolytic streptococcus, 4.

POSTMORTEM FINDINGS

Thirteen cases of pneumonia were examined postmortem between September 20 and October 5. The one on September 20 showed patchy consolidation affecting both lower lobes and was due to the hemolytic streptococcus. Another case showed several old tuberculous cavities in the right lower lobe, which lobe showed well defined consolidation. With these two exceptions all the other cases of the series, eleven in number, presented the typical picture of lobar pneumonia. Complete consolidation of one lobe was present in six cases, there being no instance in which less than this amount of lung was involved. Two lobes were completely involved in four cases, and three lobes in two cases. In every instance in addition to the massive lobar consolidation, partial involvement was present in other lobes. This was found four times in one other lobe, and seven times in two other lobes. This partial involvement was usually a more recent lesion, rather an intense engorgement than a consolidation, and in most instances was found on the side opposite from the older process. There was a decided predilection for the lower lobes, as nine upper lobes showed no gross changes, while this was true of but two lower lobes. The middle lobe was unaffected seven times.

A serofibrinous pleurisy was present eight times, but the fluid was small in amount except in one instance. A small serous exudate was found in two cases. Interlobar pleurisy was not uncommon. Beginning pericarditis was present in three instances. The diagnosis of lobar pneumonia was confirmed histologically.

HISTOLOGIC APPEARANCES FOUND IN THE LUNGS

In the portion of the lung last affected, and usually comprising a part of a lobe on the side opposite the oldest lesion, there appeared scattered areas of round cell infiltration chiefly in the neighborhood of small bronchi, with more or less normal lung tissue between. Many of the alveoli, however, were filled or partly filled with serum and leukocytes, and in some instances with a large amount of blood.

Sections from older lesions, that is, from lobes with complete or nearly complete consolidation, and grossly presenting a firm, dark red, slightly moist surface on section, showed marked engorgement of the capillaries and an exudate of blood, serum, leukocytes, and fibrin filling all the alveoli.

In a few instances the lesions were further advanced, the gross specimen being gray or reddish gray. These sections showed the alveoli uniformly filled with leukocytes and fibrin, and little or no blood. In some there was apparently a softening of the exudate and loosening from the alveolar walls.

MEASURES THAT DIMINISHED SEVERITY OF EPIDEMIC

Statistics show that our base hospital admission rate was the highest in any camp in the United States and that our death rate was the lowest. We are convinced that the low death rate is directly dependent on the care used to have all the sick sent to the hospital, as set forth in the high admission rate. We believe, therefore, that the chief reasons why this severe epidemic was not even more severe are as follows:

At the very beginning, Lieut.-Col. J. M. Willis, M. C., commanding officer of the base hospital, placed sufficient ward space at our disposal so that no overcrowding was necessary; even at the height of the epidemic, when we had nearly 400 cases of pneumonia on hand, a sufficient number of hospital corpsmen were furnished to give every patient brought in prompt attention; surgeons were detached from other departments of the hospital for temporary service on the medical side, and the Surgeon-General promptly sent us 100 additional trained nurses so that there was no lack of trained personnel in any department.

The camp surgeon, Lieut.-Col. J. A. Burket, supplemented the work of our commanding officer by having every suspicious case of influenza traced down at once, and nearly all were sent to hospital immediately. He also gave us great and timely assistance by transferring to us, for the emergency, a number of surgeons from his department.

A RECENT EPIDEMIC OF ACUTE RESPIRATORY INFECTION AT CAMP CUSTER, MICH.*

PRELIMINARY LABORATORY REPORT

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AND

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CAMP CUSTER, BATTLE CREEK, MICH.

From a knowledge of what other camps were experiencing with the epidemic of so-called "influenza," and in anticipation of an outbreak of a similar infection in this camp, certain preliminary bacteriologic work was attempted. Several days before any cases of influenza were reported at Camp Custer, a study was begun to determine the prevalent mouth flora of healthy individuals. For this purpose cultures were made from the throats of enlisted men of the Fourteenth Sanitary Train. Smears and cultures on plain blood agar plates were made from the nose and nasopharynx; in all, 357 cultures were taken. The usual mouth organisms were recovered. In addition, 75 per cent. of the cultures showed a hemolyzing streptococcus. In only five cases, or in a little more than 1 per cent., was the influenza bacillus identified. Before these studies could be extended, the epidemic broke. However, this much was apparent: A high percentage of healthy individuals were carrying hemolyzing streptococci somewhere in their respiratory tract. The influenza bacillus was not present in greater numbers than one is accustomed to find this organism in normal throats.

INFLUENZA

Influenza patients who showed no physical signs of pneumonia were first studied. Throat cultures, blood cultures, blood counts and urinalyses were made.

Throat Cultures.—Smears and cultures of the throat were made in 366 cases. Plain blood agar plates were employed, and special care was taken to identify the influenza bacillus. Organisms recovered were: hemolyzing streptococci, 34 per cent.; nonhemolyzing streptococci, 33 per cent.; pneumococci, 12 per cent.; influenza bacilli, 8 per cent.

Blood Cultures.—One hundred and forty cultures were made on these patients at various stages of the disease. In all cases the cultures remained sterile.

Blood Counts.—Five hundred and eighty leukocyte counts were made with the results as shown in Table 1. Seventy per cent. of these counts showed 8,000 cells or less per cubic millimeter. This leukopenia was the most impressive feature of the blood count. The polymorphonuclear leukocytes showed but slight increase over the normal. There has been no conspicuous lymphocytosis, nor other noteworthy features of the blood count.

Urinalyses.—Twenty per cent. of the urines examined have shown albumin. In the majority of cases this was recorded as a faint trace. Casts were an infrequent finding, occurring in 4.7 per cent. of the cases.

PNEUMONIA

It became apparent with the development of a large number of cases of pneumonia that the greatest importance attached to their study. Blood cultures, sputum typings, blood counts and urinalyses were made in as many cases as possible.

Blood Cultures.—Five hundred and ten blood cultures in cases of pneumonia have been made to date. Of these, eleven have shown organisms as follows: hemolyzing streptococcus in ten cases, *Pneumococcus mucosus* once. In other words, only 2 per cent. of pneumonia patients have shown a bacteremia. These cultures were taken from the sickest patients, the majority of whom died shortly after. Many cultures were sterile which were taken only a few hours antemortem. In seven of the eleven cultures that have shown organisms, the blood was taken just prior to death. The evidence clearly points to the fact that the infection of the lungs is only exceptionally accompanied by a bacteremia and that the blood stream is not invaded up to a very late period in the disease. These findings agree with the apparent method of development of the pulmonary lesions and add weight to the belief that a preexisting bronchitis usually unassociated with marked sore throat gives rise to a bronchopneumonia by a process of direct extension. These results are not entirely in keeping with our experience with streptococcus pneumonias of last winter, which usually developed on the basis of a severe primary sore throat and were accompanied by positive blood cultures in 20 per cent. of the cases. It is of interest to note that of the first 430 blood cultures taken, only four showed organisms, less than 1 per cent.; while seven of the last eighty cultures have been positive; this agrees with other later developments in the epidemic.

TABLE 1.—RESULTS OF 1,580 LEUKOCYTE COUNTS MADE BEFORE AND AFTER THE DEVELOPMENT OF PNUEMONIA

Leukocytes per C.Mm.	Prepneumonia Stage		Pneumonia	
	No. of Cases	Per Cent.	No. of Cases	Per Cent.
4,000- 6,000	96	16.5	288	28.8
6,000- 8,000	306	52.7	390	39.0
8,000-12,000	113	19.5	177	17.7
12,000-16,000	48	8.3	83	8.3
16,000-20,000	14	2.5	29	2.9
20,000-30,000	3	0.5	33	3.3
Totals.....	580	....	1,000	
Differential Counts: Occurrence of polymorphonuclear leukocytes: Per Cent.				
40-50	6	2.6	35	3.5
50-60	40	17.4	112	11.2
60-70	60	26.0	260	26.0
70-80	97	42.2	459	45.9
80-90	27	11.8	134	13.4
Totals.....	230	....	1,000	

Sputum.—The character of sputum produced by pneumonia patients was often unsatisfactory for typing because of the extremely critical condition of the patients at the time the collections were attempted. When sputum could be procured it was usually abundant, mucopurulent, and greenish yellow. A fair proportion of sputums were blood streaked, and quite a number were described as rusty. An attempt was made to trace some relation between the type of sputum and the organisms recovered from the sputum during life and the lungs postmortem. None appeared to exist. Rusty sputums were found as often in cases of streptococcus as of pneumococcus infection, and mucopurulent sputums occurred as frequently with one

* Compilation to and including Oct. 22, 1918.

organism as with another. As many sputums were typed as time would permit. From the original specimens smears were made, blood plates streaked, and Avery's rabbit's blood broth inoculated. Agglutinations and precipitations were done after from six to eight hours with the broth suspension. Bile solubility was determined and the results were checked by plain blood agar plates. In all, 740 sputums of pneumonia patients have been typed. The preponderance of streptococci is apparent, especially the nonhemolytic variety. Of the total of 451 streptococci recovered, 30 per cent. were hemolytic and 70 per cent. nonhemolytic. The

TABLE 2.—TYPES OF ORGANISMS RECOVERED FROM THE SPUTUM OF PNEUMONIA PATIENTS

	Number of Cases	Per Cent. of Total
Pneumococcus:		
Type I	11	1.5
Type II	16	2.15
Type III	16	2.15
Type IV	148	20.00
	191	25.8
Streptococcus:		
Hemolytic	126	17.0
Nonhemolytic	325	43.9
	451	60.9
Influenza	38	5.2
Unsatisfactory	60	8.1
Total	740	

common mouth pneumococcus was isolated in far higher percentage than usual, Type IV occurring 148 times. The remaining pneumococci were relatively infrequent. The influenza bacillus was identified in thirty-eight instances. In these cases the organism was seen in smears and subsequently recovered from the blood agar plates. In the majority of cases the influenza bacillus was associated with the streptococcus. In only eight instances was it found alone.

That these results do not accord entirely with the postmortem bacteriology of the lungs and blood is explained by the fact that many patients were moribund before the laboratory was aware of their sickness. From many of the patients sputum could not be had. Therefore, pneumonias caused by the more fatal types of pneumococcus had their bacteriology worked out postmortem, while patients with the less severe infections with the pneumococcus for the most part recovered, and the type was determined during life.

Blood Counts.—A study of 1,000 leukocyte counts in pneumonia patients disclosed a striking lack of reaction on the part of the bone marrow; 67.8 per cent. showed 8,000 or fewer leukocytes per cubic millimeter, and 85.5 per cent. were 12,000 or under per cubic millimeter. These counts agree with those obtained in the prepneumonia period. The secondary invasion of the lungs is apparently without effect in arousing the bone marrow, as is commonly the case in pneumonia. Leukocyte counts have, therefore, been of no value in indicating the onset of pneumonia.

Urinalyses. — Urinalyses on pneumonia patients showed the presence of albumin in 40 per cent., about double the incidence in uncomplicated "influenza" cases. Casts have likewise been a much more frequent occurrence, being present in 22 per cent. of the urines examined.

POSTMORTEM BACTERIOLOGY

The attempt has been made to secure as large a number of lung and heart's blood cultures as possible from fatal cases. A total of 280 fatal cases were thus studied. When necropsies were not performed, lung and heart's blood punctures were made and smears and cultures procured. In all cases examined postmortem, two blocks of consolidated lung were taken in sterile Petri dishes under sterile precautions, and carried to the laboratory for cultures. Plain blood agar plates were streaked and broth cultures inoculated. A number of fresh smears were made from each lung. The heart's blood was cultured in every case. In smears and in cultures particular care was taken to identify all gram-negative bacilli. All bile-soluble gram-positive diplococci that did not come down in pneumococcic serums of Types I, II and III were put through mice for verification. In a number of instances agglutinations were obtained from the mice after failure with rabbit's blood broth suspensions, indicating the importance of the mouse method as a check in Group IV diagnosis.

The result of these cultures is shown in Table 3. No one organism stands out above the others as peculiarly the etiologic factor. Streptococci have been present 142 times in the lungs, and pneumococci seventy-eight times. Hemolytic and nonhemolytic streptococci have appeared about equally as the causative factor. Type II has occurred about twice as frequently as any other type of pneumococcus. Type III has been recovered eighteen times. Small gram-negative bacilli have been recovered five times from the lungs, and three times from the heart's blood. As a usual occurrence only one organism was found in a given case. In three instances in the lungs, the influenza bacillus was found in conjunction with the streptococcus. In two cases it was the sole organism recovered. In the heart's blood it was once present with the streptococcus, once with staphylococcus, and once alone.

The occurrence of such a variety of organisms in pneumonic lungs suggests that they are secondary invaders, the field being prepared by the lowering of resistance incident to a preceding disease, which in

TABLE 3.—BACTERIOLOGIC FINDINGS AT NECROPSY FROM THE LUNGS AND HEART'S BLOOD OF PNEUMONIA PATIENTS

	No. Recovered from Lungs	No. Recovered from Heart's Blood
Pneumococcus	78	77
Type I	8	6
Type II	34	33
Type III	18	16
Type IV	18	22
Streptococcus	142	110
Hemolytic	76	62
Nonhemolytic	66	48
Influenza	8	3
Unsatisfactory	30	29
Sterile	22	86

this epidemic was in most instances influenza, and that in each instance the invader is probably the organism of which each individual is at the time a carrier. The high percentage of positive heart's blood cultures, taken in conjunction with contradictory antemortem findings, indicates how rapidly and at what a late period in the course of the disease the defense factors in the blood of the patient break down to allow invasion.

Table 4 shows the sugar reaction of forty-two organisms recovered from the lungs and the heart's blood at necropsy and chosen at random. All of these organisms were bile insoluble, produced no hemolysis on blood mediums, occurred in chains or in pairs, and

retained the gentian violet when stained by Gram's method. The variability of inulin fermentation is particularly evident. The absence of mannite fermenters, strains corresponding to *Streptococcus fecalis,* is also noteworthy.

PATHOLOGY

Without exception the deaths from this respiratory epidemic have been due to secondary pneumonia. In no instance has a case come to necropsy in which death occurred from influenzal infection alone. The bodies have been those of well nourished young men, the termination having been reached too quickly for gross external changes. Many of the bodies have shown a moderate degree of corpulence. Reference to Table 5 will show the associated chronic lesions manifested.

TABLE 4.—SUGAR REACTION OF FORTY-TWO ORGANISMS FROM THE LUNGS AND THE HEART'S BLOOD

Streptococcus	Fermentation Reactions *					
	Saccharose	Inulin	Salicin	Mannite	Lactose	Raffinose
1	—	+	+	—	—	—
2	+	—	+	—	—	+
3	+	—	+	—	—	—
4	—	—	+	—	—	—
5	::	—	::	—	+	
6	::	—	::	—	+	
7	—	—	—	—	+	—
8	—	—	—	—	—	—
9	::	—	::	—	+	
10	—	+	—	—	—	—
11	+	—	—	—	+	—
12	::	+	::	—	+	
13	—	—	+	—	—	—
14	—	+	—	—	+	—
15	::	—	::	—	+	
16	—	+	—	—	—	+
17	—	+	—	—	+	—
18	—	+	+	—	—	+
19	::	—	::	—	+	
20	::	+	::	—	+	
21	::	+	::	—	—	
22	+	—	—	—	+	—
23	::	+	::	—	+	
24	—	—	—	—	+	—
25	—	—	—	—	+	+
26	—	—	+	—	—	—
27	—	—	+	—	—	—
28	::	+	::	—	+	
29	::	+	+	—	+	+
30	—	+	+	—	+	—
31	+	—	—	—	+	+
32	—	—	—	—	+	—
33	::	—	::	—	+	
34	::	+	::	—	+	
35	::	+	::	—	+	
36	—	—	—	—	+	—
37	+	—	+	—	+	—
38	—	+	+	—	+	—
39	—	—	—	—	—	—
40	—	—	+	—	—	—
41	—	—	—	—	+	—
42	—	—	—	—	—	—

* In this table — indicates no fermentation, and + indicates fermentation.

These have occurred in sufficient number to warrant the belief that in a fair proportion of fatal cases the patients were seriously handicapped beforehand in the battle with their infection.

For the most part there has been a striking similarity in the appearance of the respiratory organs in the 123 bronchopneumonias coming to necropsy. The mucous membrane of the trachea and bronchi has appeared intensely red, swollen and covered with a mucopurulent exudate. The bronchial glands have been enlarged, soft and reddened on section. The majority of the lungs have been voluminous and heavy. As a general rule the posterior lobes have varied from the remaining lobes, and have presented a surface dark purplish red, sometimes smooth, sometimes roughened and dull from collections of fibrin. They have felt firm throughout, and only occasionally could areas of greater density be made out.

The remaining lobes have shown a greater proportion of air-containing tissue. They have usually presented pale, nonresilient emphysematous patches interspersed with dark red, firm and slightly depressed areas which were to be felt as irregular consolidations extending to various depths into the lung substance. Section of the lung through the lower lobes usually displayed an exceedingly moist cut surface, the slightest pressure forcing to the surface quantities of blood-tinged fluid. This may exist to such a degree as to obscure the underlying process. Again, the confluence of separate patches of consolidation may be so complete as to be confusing, but careful study has usually made evident the bronchial distribution of the process. As a general occurrence, however, patchy areas of consolidation clustered about the bronchi were easily made out. Mucopurulent plugs filled the bronchi and bronchioles. Section of the remaining lobes showed a much drier lesion. Here islands of dark red, often hemorrhagic, consolidated lung showed against a paler background of nonelastic emphysematous pulmonary tissue.

Only one case of lobar pneumonia has occurred. This was caused by a Type I pneumococcus. It appeared during the first days of the epidemic, and its occurrence was undoubtedly fortuitous. Four cases showed the changes of an interstitial bronchopneumonia. Here the white, thickened, pus-filled bronchioles surrounded by hemorrhagic, edematous or indurated areas of consolidation presented a very distinctive picture, entirely different from the great majority of the pneumonic processes seen.

Microscopically, a variety of pulmonary changes have been found, but nothing has been encountered beyond what one is accustomed to expect in bronchopneumonia. The accumulation of inflammatory cells may be patchy, or so massed as to present, in a limited number of sections, an appearance indistinguishable from lobar pneumonia. The exudate may be very dense or it may be thin; in either case edema and congestion have been marked, and so greatly compromised the remaining lung tissue. Polymorphonuclear leukocytes have, as a rule, greatly predominated in the exudate. In other sections, however, the presence of many mononuclear wandering cells and epithelial cells has been noted. Often great quantities of erythrocytes have been massed together in the air cells, sometimes presenting a very striking picture, especially when contiguous to the other air cells stuffed with the inflammatory exudate. Fibrin has not been a prominent part of the exudate except in one case. In a few cases, wide stretches of exudate appear from which all remains of alveolar walls have disappeared. In several such cases, focal areas of disintegration were in process, evidenced by poorly stained, fused masses of cellular débris in which many remains of destroyed nuclei appear. The terminal bronchioles usually contain the same type of exudate described in the alveoli. The mucous membrane is often separated off, and tangled fragments appear free in the exudate. Smears of the lungs usually showed enormous numbers of gram-positive diplococci. It was rare to find organisms arranged in chains. Microscopic study of the remaining organs has not led to any noteworthy disclosures. Eighty of the 123 cases of pneumonia examined postmortem showed an associated pleurisy. Thirty-four were described as serofibrinous, twenty-five as serofibrinopurulent, and twenty-one as fibrinous.

Strange as it may seem, there was no difference to be made out in the nature of the process caused by the streptococcus, pneumococcus or influenza bacillus. It was not difficult to distinguish Type III pneumococcus by the sticky exudate and the greater tendency toward confluence, but no matter what the infecting organism, each appeared to produce the same type of pulmonary lesion with equal facility.

Reference to Table 5 will show that there have been no particularly constant extrapulmonary complications. Nine cases have shown hemolytic jaundice, the majority of these appearing late in the epidemic. Four cases showed a massive interstitial emphysema, probably beginning in the multiple rupture of the emphysematous alveoli at the pulmonary hila. There were four cases of pneumococcus meningitis developing in the course of the disease, only two of which came to necropsy, however. There have been relatively few splenic tumors. A firm, congested organ not a great deal larger than normal has been the rule. Acute

TABLE 5.—COMPLICATIONS OF ONE HUNDRED AND TWENTY-THREE CASES OF BRONCHOPNEUMONIA DISCLOSED AT NECROPSY

Pulmonary congestion and edema	96
Congestion of the spleen	71
Pleurisy	74
Serofibrinous	34
Serofibrinopurulent	20
Fibrinous	20
Cloudy swelling of the kidneys	21
Icterus	8
Lung abscess	5
Interstitial emphysema	4
Acute nephritis	3
Acute peritonitis	1
Meningitis, pneumococcus	2
Pericarditis, acute serofibrinous	3
Rupture of the rectus muscles	3
Cardiac dilatation	3
Cholecystitis	1
Abscesses of the kidneys	1
Myocarditis, acute	1
Abscess of the foot	1
Gastric ulcer	1
Status lymphaticus	1
Abscess of the right kidney	1
Congenital cystic kidneys	1
Pleural adhesions, marked	8
Pericarditis, chronic, adhesive	1
Cholelithiasis	1
Hydropericardium	1
Cirrhosis of the liver	1
Peritoneal adhesions	1
Endocarditis, chronic	1
Nephritis, chronic	1
Horseshoe kidney	1

changes in other parenchymatous organs have been inconspicuous. Marked acute nephritis occurred only three times. Rupture of the rectus muscles was found in four instances. The bone marrow of the femur in all cases studied has appeared to gross examination pale and unreactive.

There has been a noticeable and instructive change in the course and manifestations of the disease in the last days of the epidemic. The leukopenia has disappeared in large measure, twenty of the last thirty-five leukocyte counts having averaged 20,000 cells per cubic millimeter. A far higher percentage of blood cultures show positive results. Of the total of eleven positive findings, seven have been obtained in the last eighty cultures. Synchronous with these changes, necropsy findings have shown older processes in the chest, more fibrin and pus in the pleural cavities, collapsed lungs showing various stages of resolution and extension of the bronchopneumonia.

The average leukocyte count in the streptococcus pneumonias of last winter in this hospital was 17,000, and positive blood cultures were obtained in 20 per cent. of the cases. The duration of the present pneumonias to the time of death has been noticeably shorter than those studied last winter. There is possible significance in the fact that the few pneumonias of the present epidemic that presented a picture at necropsy most like those of last winter are those which have a period of longest illness, in this respect also corresponding to last winter's pneumonias.

In view of the high incidence of pneumonia in the Southern camps, the presence of large numbers of carriers of intestinal parasites has been suggested as possibly a predisposing factor. In search of such factors in the development of pneumonia in the recent Custer epidemic, the incidence of intestinal parasites was investigated. Out of 150 stools of pneumonia patients taken at random and examined, no ova or worms were found. Previous to the outbreak of influenza, a survey of several thousand Southern troops stationed at this camp showed intestinal parasites in 3 per cent. of the cases studied.

To determine the pathogenicity for laboratory animals of various strains of hemolytic and nonhemolytic streptococci recovered at necropsy, mice, rabbits and rats have been inoculated. Of thirty-three inoculated mice, twenty-two died within twenty-four hours, the original organism being recovered postmortem in each instance. Hemolytic and nonhemolytic streptococci were equally fatal. Fourteen rabbits and twelve rats were injected intravenously and subcutaneously with hemolytic streptococci. With the exception of one rabbit and one rat, both of which died of a rapid septicemia, complicated in the case of the rabbit by bronchopneumonia, all of these animals are still living.

SUMMARY

The patient is attacked by a severe acute infection of unknown etiology. In the prepneumonia stage the principal objective signs are those of a marked mucopurulent bronchitis, with high temperature, generalized pains, prostration and a leukopenia. If the process advances, the peribronchial lung tissue is quickly involved by direct extension. A massive bronchopneumonia, in many cases accompanied by acute pulmonary congestion and edema, rapidly develops, which as quickly resolves or goes on to an early termination. The marked leukopenias are probably only one phase of a general overpowering of the defensive forces of the organism. The rarity of concurrent septicemias is doubtless explained by the rapid course of the disease and the mode of origin from the bronchi. The influenza bacillus has played a minor rôle in the production of bronchopneumonia. The infective cause of the antecedent respiratory infection remains undetermined.

Aloes as a Local Sedative.—Friar's balsam, which contains aloes, is used as a sedative for bites, wounds and skin irritations, and is a good preparation for the purpose. F. W. Cock, M.D. (*Lancet*, London, Sept. 7, 1918), says a more pleasant form in which to use aloes for external sedative purposes is a saturated solution of aloes in tincture of tolu. It should be kept in a well stoppered bottle and shaken before using. For bites it should be applied once or twice before any scratching is done. It gives complete relief from the intense itching of harvest bug bites. Cock also recommends tincture of tolu for use in the croup kettle in bronchitis instead of compound tincture of benzoin, as being just as effective and more pleasant than the friar's balsam, in which latter the disagreeable odor of the aloes persists after the aromatic portion has volatilized.

TRANSFUSION IN THE DESPERATE PNEUMONIAS COMPLICATING INFLUENZA

PRELIMINARY REPORT ON THE SUCCESSFUL USE OF TOTAL IMMUNE CITRATED BLOOD

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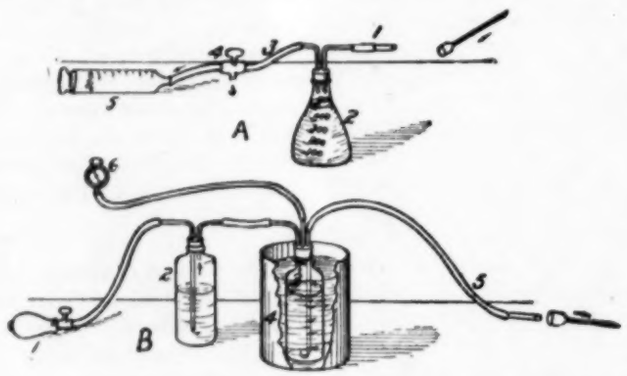
The problems presented to the medical personnel supervising the care and treatment of the selected seriously ill civilian employees of the Mare Island Navy Yard were many. These cases represent a small percentage of the total illness of the community, since many of those not seriously attacked went to their homes and did not report to the emergency hospital; and our allotment was principally composed of neglected patients who did not do well with home treatment together with a small proportion of men who had no home or who were taken so suddenly and severely ill that they were unable to get home. The general status of the large majority of patients, with a resultant failure of accepted care and treatment, was most discouraging. The average patient was of the lower type as regards mentality, morality and personal hygiene, and in the main was physically deficient. A large proportion of the patients had been ill and without even simple care for from two to eight days before admission. Fifty per cent. of the pneumonia patients had been ill for four or more days and presented a uniformly low white blood count, from 2,000 to 4,000, extreme toxic cardiopathies with vasomotor palsy, cyanosis, depressed respiratory activity, no localization of the pneumonic process, delirium and tremendous acidosis, with greatly deficient or absent urinary chlorids—conditions that remained uncorrected by the usual care and the desperate efforts of alkalinization by intravenous, subcutaneous and colonic routes, and the stimulation of leukocytosis by the intravenous injection of magnesium sulphate and other supportive measures.



Apparatus for transfusion: *A*, receiving apparatus: 1, receiving tube with very short rubber connection (all paraffined); 2, 500 c.c. Ehrlenmeyer flask (paraffined); 3, suction tube for partially exhausting air from flask; 4, two-way stopcock; 5, 20 c.c. syringe; *B*, apparatus for giving blood to recipient: 1, bulb and valve (from sphygmomanometer); 2, wash bottle (containing mercuric chlorid, 1:500); 3, delivery bottle for citrated blood; 4, vessel containing water at temperature of 43 C.; 5, delivery tube; 6, pressure gage (to measure rate of flow and pressure).

Previous work and excellent results by others with the use of serum from convalescent influenzal pneumonia patients suggested its use to us. However, the difficulty of keeping serum properly, and the uncertainty of testing the old serum as regards compatibility, made it inconvenient to our circumstance. The value of immune serum having been established, no objection to the use of total blood could be seen. The added advantages theoretically to be gained by the use of total blood are:

1. The increased coagulating power caused by the introduction of blood platelets. It was found that in advanced cases the coagulability of the blood was markedly decreased, and was undoubtedly an important factor in allowing this type of pneumonia to progress to a fatal termination.

2. The fact that additional immune bodies are contained in the leukocytes, as first advanced by Metchnikoff and later shown by practical application. Cases progressing to a fatal termination have shown an increasing leukopenia down to 2,000 and lower. We therefore decided to try transfusion of total blood of persons convalescent from two days to six weeks (height of immune content of blood) from pneumonia complicating influenza.

The simplicity, the safety and the brilliant results have been most encouraging.[1] In thirteen cases of the desperate type described, the following brief observations have been noted: Four patients, two of whom had been ill for more than ten days and were at the time moribund, died. Of the remaining nine, all showed definite localization of the pneumonic process with progressively increasing leukocytosis and resolution, rapid clearing of cerebrospinal, respiratory, cardiovascular and renal disturbances, diminished acidosis, and normal temperatures for from twenty-four to seventy-six hours.

We are using from 200 to 400 c.c. of blood at a dose and repeating in from twelve to twenty-four hours if marked results are not obtained. With improved technic we are using it early in the course.

TECHNIC

The usual delirium of the patient, the absence of a surgically clean place for work, and the occasional delay suggested the citrate method as the more practical. The work in emergency wards and tents demanded special care as regards avoidance of infection. This technic has made the procedure safe and simple:

The donors are persons who have had a definite influenza accompanied by a definite pneumonia; the time of selection is from three days to six weeks of convalescence (height of immune body content). Donors are selected from our own patients and from those in surrounding districts. Donors must be subjected to the Wassermann test and clinical examination for syphilis. The donor's and the recipient's blood is tested for isohemolysins and iso-agglutinins.[2] We have found several incompatibilities. All preliminary tests having been made, the blood is taken with a paraffined receiving apparatus from the veins about the anticubital fossa with the usual surgical technic. The apparatus shown in the accompanying illustration allows no exposure of blood to infected

1. Detailed case reports and statistics are to follow in a future report.

2. Compare Kolmer, J. A.: Practical Text-Book of Infection, Immunity and Specific Therapy, with Special Reference to Immunologic Technic, Ed. 2, Philadelphia, W. B. Saunders Company, 1918.

air. The paraffined receiving flask minimizes the danger of coagulation. A 1 or 2 per cent. solution of sodium citrate in physiologic sodium chlorid solution is used.

The blood is transferred to the closed apparatus for delivering the blood to the recipient. A vein is chosen on the arm and the usual technic followed. The pressure gage is of extreme value to control rate and pressure of flow. The citrated blood is kept at proper temperature by a water bath, as shown in the illustration. Exclusive of laboratory tests, it takes approximately forty-five minutes to perform a complete transfusion, taking and giving.

ERYTHEMA MULTIFORME

A CLINICAL AND LABORATORY STUDY OF FORTY-SEVEN CASES

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CAMP TRAVIS, TEXAS

A definite cause may be ascribed to certain cases of the clinical entity that we call erythema multiforme. The rôle of certain drugs, antitoxins and serums has long been recognized. Cases developing following the ingestion of stale meat, fish, oysters, etc., have been seen sufficiently often to warrant the assumption of direct causation, theoretically being due to the absorption of products of decomposition, bacteria or their products. It would seem that a few reported cases have been due to uterine irritation, a neurosis, etc. Parker and Hazen studied a group of cases occurring in the course of such diseases as typhoid and diphtheria, and were inclined to favor a toxic theory. The theory of absorption of intestinal toxins has long been prominent in the literature. Lain, Chipman and others have recently associated erythema multiforme with focal infections about the teeth, tonsils and accessory air sinuses. Mahon, Vidal and others, from a purely theoretical standpoint, believed a number of cases to be of bacterial origin. Corlett reported a case following a gunshot wound in which a streptococcus was found. Epidemics have been reported by Gaul, Herxheimer, Duhring and others.

I wish to report certain phases of an endemic form of erythema multiforme at Camp Travis, Texas, during the months of February and March, 1918. In all, forty-seven cases were seen, the cutaneous pictures of which varied through all grades with mild erythematous lesions to those showing all manner of individual lesions or a preponderance of vesicular and bullous lesions on skin and mucous membranes. In most of the cases with extensive skin involvement the onset of the disease was heralded by a mild chill or chilly sensations, followed by a febrile reaction that continued over a period of from fourteen to twenty-one days. The temperature curve was irregular but showed a tendency to an evening rise and a morning remission, all ending by lysis. Many of the patients observed had a rise of temperature for two or three days only, the highest recorded temperature being about 100. Several had no abnormal temperature. There were purpuric lesions in approximately 10 per cent. of the cases. Only two gave a history of an attack prior to enlistment, while ten of the forty-seven returned to the hospital with a second attack, one with a third. We early began to investigate every patient that was admitted to the hospital. Careful physical examinations failed to reveal anything noteworthy except that nearly all had hypertrophied and mildly inflamed tonsils. Several had open wounds, the result of recent vaccinations.

LABORATORY FINDINGS

All the urines were practically normal. A few showed a transient albuminuria.

The feces were negative.

In the red cells of the blood there was no change; in the white cells, a moderate leukocytosis, rarely over 11,000.

The hemoglobin was normal.

The differential count showed that the leukocytosis was due to an increase in the polymorphonuclears.

Blood cultures, taken at different times during the course of the disease, were all negative, as were cultures from vesicular and bullous lesions.

Throat swabs showed all the organisms usually found.

Cultures from deep tonsillar crypts showed in thirty cases a hemolytic streptococcus as the predominating organism. Superficial swabs were negative for this organism in the same cases. In nine cases a pyogenic streptococcus was found. In two cases in which the throat and tonsils were negative, the hemolytic streptococcus was isolated from recent vaccination wounds.

At the same time that the cases under consideration were being studied, there was in Camp Travis an epidemic of streptococcic respiratory infections, in the greater number of which the *Streptococcus hemolyticus* was recovered.

Repeated attempts to obtain pure cultures of the *Streptococcus hemolyticus* on defibrinated blood agar failed, and no growth was obtained on plain plus reaction agar.

Serum from infected individuals did not agglutinate the organism.

The opsonic index gave us no information.

It was noted that with the clearing of the exanthem we were unable to obtain the streptococcus with the same facility from the tonsil crypts, but that in those cases with second attacks the organism could again be found. Believing that this organism was possibly the cause of this particular group of cases, acting by elaboration of toxins from a focus in the tonsils, all patients in whom the streptococcus was found were referred for tonsillectomy as soon as the exanthem, temperature, etc., had subsided. In none of these cases was there a recurrence.

CONCLUSIONS

The presence of an endemic form of erythema multiforme, presenting, in addition to the cutaneous manifestations, certain phenomena common to all the acute infectious diseases, makes plausible an infectious theory of etiology. The presence of a hemolytic streptococcus deep in moderately inflamed tonsils, coupled with what scant knowledge we have of the pathogenicity of this particular organism, lends color to the theory. Absence of organisms in the blood stream and skin lesions would seem to indicate the action of toxins generated in a focus of infection rather than a localization of organisms in the skin. The results obtained by tonsillectomy in streptococcus carriers is not conclusive on account of the small number of cases, but it is at least suggestive.

Symptomatic Treatment.—This form of therapy—often disdainfully characterized as "merely symptomatic"—represents, in my view, the very acme of the medical art.—B. Fantus, M.D.

A CLOSED SYSTEM OF DRAINAGE FOR PENETRATING WOUNDS OF THE CHEST*

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FRANCE

No satisfactory system of drainage for infected war wounds of the chest has been employed that does not produce a more or less open pneumothorax. It is well known that open pneumothorax seriously disturbs the mechanics of respiration and circulation, and exposes large areas of pleural membrane to infection. It is well known also that open pneumothorax is very seldom cured spontaneously.

Recent war surgery has demonstrated satisfactorily that the pleura is able to overcome a very extensive contamination and even a severe infection in a comparatively short time. But to do so the pleura must be in practically a normal condition otherwise, that is, free from accumulations of air or fluid.

Patients operated on early and left with open drainage invariably have done badly. Patients not operated on have developed empyema or become septic. The middle ground offers the best chance, and patients operated on at a selected time and closed again have done remarkably well.

It is not always possible to provide operation and closure at the critical hour; therefore many cases are seen, especially at the base, which demand drainage just as certainly as they demand being spared the embarrassment of an open pneumothorax, in particular those cases reacting violently to infection when there is a small hemothorax and no pneumothorax. In such a case the pleural membranes, respiration and circulation are relatively normal; but when an open

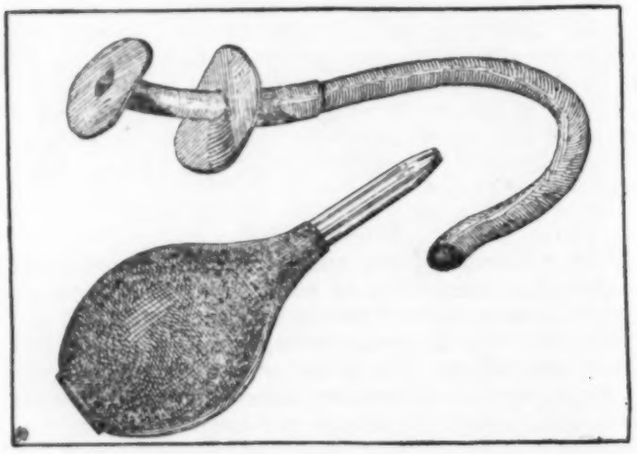

Fig. 1.—Brewer's tube.

pneumothorax is produced, all the membranes are exposed to infection alike, and the patient is seriously damaged by impaired respiration and circulation. It is quite certain that pleural membranes when in approximation combat infection better than when separated, probably for the same reason that wounds of the tissues heal best when all contaminated surfaces are obliterated and accumulations of serum or blood avoided.

Mechanical difficulties have been the chief obstacles in the way of closed drainage. I have seen various devices tried by several confrères in the Royal Army Medical Corps, but when unsuccessful it was usually due to the difficulty in making an anastomosis between

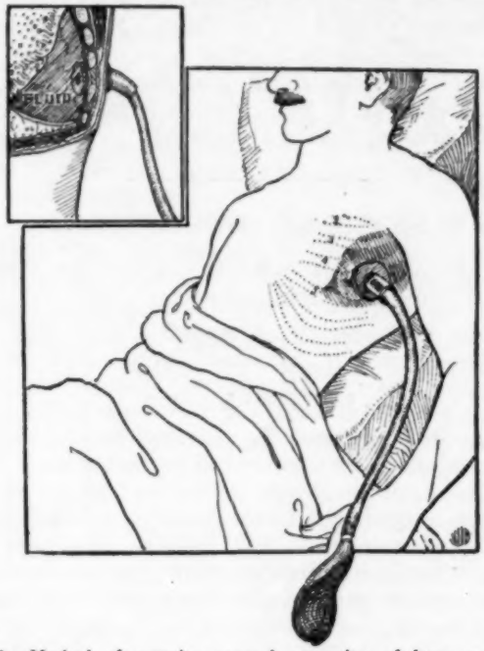

Fig. 2.—Method of securing normal expansion of lung and liberal drainage of pleural sinus.

a rubber tube and the chest wall. At the Lakeside Unit we have used the Brewer tube with very satisfactory results. This is a rubber tube with flange arrangements (Fig. 1). It is inserted through a rib that has been resected for from one-half to three-fourths inch, and a stab wound through the pleura. It is not necessary to suture the tissues tightly around the tube, for an air tight junction can be made with adhesive tape and dressings together with the flanges of the tube. To maintain a continuous negative pressure on the chest, a stiff rubber bulb is collapsed and connected to the free end of the tube by a glass connection. In civil practice we were using Politzer bags, but at present the rubber bulbs of automobile horns are more available. At operation the surgeon can usually insert the tube through his stab wound with a very little inrush of air, and by manipulating the flanges of the tube prevent a pneumothorax of any appreciable size from forming. What air has entered the chest can be promptly pumped out with the bulb, a large surgical clamp on the tube being used as a valve. By keeping the bulb collapsed and dependent below the wound (Fig. 2), one can make the lung expand normally and at the same time provide a liberal drainage of the pleural sinus.

It has been found that the lung comes down very readily, and breath sounds can be heard almost at once over the space previously occupied by fluid. In all cases a tube will remain tightly in place at least five days, in which time the lung usually has become adherent to the chest wall, and all danger of a large pneumothorax is obviated. After the second or third day, irrigations at a low pressure can be made through the tube by means of the bulb without allowing any

* From No. 9 (Lakeside U. S. Army) General Hospital, B. E. F.

inrush of air. It is advisable to use very little pressure in irrigating lest the lung be torn loose from its newly formed adhesions to the chest wall. For the same reason, also, the patient should be protected from coughing during the first five days of the drainage. It is apparent that the treatment of these cases demands the early obliteration of the pleural sinus by adhesions; for when open pneumothorax persists, the lung is frequently collapsed and makes no progress, thus allowing a large expanse of pleura exposed to infection, and a cavity very hard to treat.

When the chest has been explored for a foreign body and drainage is found necessary, it is best to make a drainage through a separate opening, especiallly if the surgical wound is contaminated by the original wound of entry.

On chronic empyemas after gunshot wounds, or otherwise when there has been considerable fibrosis of the visceral pleura, a system of closed drainage with suction will expand the lung much better than blowing exercises; but the methods can be combined. In chronic cases after granulations have surrounded the wound, the tube can be removed, cleansed and replaced; but an air tight junction can be made with the help of adhesive tape.

The stiff rubber bulbs we are now using are found to crack and break if collapsed absolutely flat for a long time. Until better bulbs are available, it is best to collapse them partly, but empty and replace frequently.

Captain Paryzek, who has charge of wounds of the chest at the Lakeside Unit, has treated a number of cases by this method very successfully. His report in detail will soon be available.

RELAPSES AFTER APPARENT RECOVERY IN DELAYED TETANUS

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Especial interest attaches itself to the two cases of delayed tetanus reported herewith, owing to the fact that after apparent recovery had taken place, there occurred at a later date similar though milder attacks of the same disease. These men were wounded, one three and a half months, and the other nine months previous to the onset of tetanus. In the second case, three months after the patient was wounded an operation was performed in the neighborhood of the healed wound which may have resulted in an acceleration of the development of the disease. In both of these cases the local symptoms and signs were in evidence two and three weeks before the onset of the secondary, generalized tetanus. Esau, I think, observed this characteristic in 1910 in cases of shorter incubation periods. From being mildly ill when the signs were localized, both men became dangerously ill when the symptoms became generalized, showing, in sequence, pain, stiffness, clonic contractures in the wound areas, increasing trismus, photophobia, terror of noise and movement, opisthotonos, with later an emprosthotonos, excessive dyspnea, and cyanosis. Eye complications developed—in one a bad keratitis, in the other an iritis and conjunctivitis. The intelligence remained comparatively unaffected until both had reached very critical stages in their illnesses.

REPORT OF CASES

CASE 1.—*History.*—Private L. H. B. (No. 69990), Canadian Field Artillery, aged 22, in the service twenty-four months, was wounded by shrapnel, Oct. 1, 1916, in eleven places, and was given antitoxin on the same day in the field ambulance station. He believes that he was not again inoculated against tetanus. In the left leg there were only two wounds, a small one just above the knee anteriorly which healed very quickly, and a larger one on the left buttock which was drained for two weeks. This wound healed in December, 1916, and appeared as a scar the size of a half crown, situated centrally and posteriorly on the left buttock. I draw attention only to these wounds, as they seem to have been the probable sites of the infection.

Jan. 15, 1917, the patient was discharged from a hospital in Birmingham to a Canadian convalescent hospital, where he was kept for twelve hours before being returned to his unit in the Canadian Field Artillery. The next day, Jan. 16, he complained of a slight stiffness of the leg from the hip down. He was soon given a ten days' furlough and when he returned, Feb. 24, he reported sick. Two days later the pain and stiffness in the leg had become more intense and had begun darting across the back. This continued for the next two weeks, and on March 10 his jaws began to be a little stiff. For the next five days he remained mostly in bed, occasionally feeling flushed and headachy. He did not vomit. He began to find out that he had difficulty in arising from the recumbent position. March 16, he awoke from sleep with his head and shoulders twisted over to the left side. The next day this pleurothotonus continued, and he complained of a general rigidity and found that he could walk only by taking very short steps. He was then, March 17, admitted to No. 11 Canadian General Hospital showing some opisthotonos and delirium. Any movement in bed appeared to throw him into convulsions and to cause great pain. He talked very thickly, opening his jaws with difficulty not more than half an inch. Muscle percussion set up clonic contractures. He perspired freely.

Treatment and Course.—Under a general anesthesia he was given 4,500 units of tetanus antitoxin, intraspinally, 3,000 units, intravenously, and 1,500 units, intramuscularly. His maximum temperature was 102, and his pulse was 134.

The next morning, March 18, rigidity was not quite so marked, and two days later there was so much improvement that it was possible to do lumbar puncture under local anesthesia. One day a serum rash appeared on the body, after inoculation. A complicating keratitis developed in one eye at this time. The opisthotonos gradually gave way to an emprosthotonos. During the thirteen days between March 18 and March 31 he had, altogether, 30,000 units of antitoxin intraspinally, 4,500 units intravenously, and 16,000 units intramuscularly.

April 1, the patient showed great improvement. Trismus had almost disappeared, the recti were less tense, and the temperature curve was running closer to normal.

April 10, he was given subcutaneous inoculation of 500 units of antitoxin—the first in two weeks—and this was followed by only a slight serum reaction.

A note, April 15, stated that the patient was greatly improved, was free from pain and was sitting out of bed. The keratitis seemed no better. His temperature had been normal for fifteen days.

May 29, the patient was transferred to a special hospital for further eye treatment, but the keratitis improved only slowly. His general condition was hardly improved until four months later, when he began to have tremors and some stiffness in the same leg, especially so after resting it.

Relapse.—This showed itself four months later, September 13, and within ten days the condition had become so aggravated that the patient could stand up and begin walking only with great difficulty.

On the eleventh day of the relapse, September 24, he felt some stiffnesss in the jaws. Two days later trismus was marked, and the deep reflexes were markedly exaggerated. He also complained of headache and general stiffness. He

was given 1,500 units of tetanus antitoxin intramuscularly. This was followed by a slight rise in temperature with the appearance of a rash, and by an improvement so far as pain and stiffness, were concerned. September 30, four days after the inoculation, he could open his jaws almost fully, and about one week later he felt quite fit except for a slight stiffness in the left leg. He was invalided to Canada this week. During this relapse, 15 grains of chloral three times a day were given for three days.

Case 2.—*History.*—Private P. M. (No. 436758), aged 46, with two years' service in the 14th Canadian Battalion, was wounded by shrapnel in the face—left infra-orbital region—June 18, 1916. On the same day, in a field ambulance, he was given 1,500 units of tetanus antitoxin. In September of the same year an operation for the removal of a piece of bone at the site of the injury was done, and shortly afterward he began to be bothered by twitchings of the left eye, mild at first, but gradually growing worse, with occasional headaches. This continued for the next five months. About April 9 he felt a stiffness of the jaws which at first was thought to be due to a bad tooth, and later, by reason of a growing hyperexcitability of the patient, to hysteria. The headaches became worse, and a general body stiffness appeared. April 17, he took to his bed. The next day he was seen by Lieut.-Col. A. J. Mackenzie, C. A. M. C., who made a diagnosis of tetanus.

Treatment and Course.—Under a general anesthesia, the patient was given 5,000 units of tetanus antitoxin, intraspinally, 6,000 units, intravenously, and 2,000 units, intramuscularly.

April 19, he showed marked trismus, opisthotonos, photophobia, and aversion to movement. He complained of headache, and his respirations were labored and wet. Under a local anesthesia he was given 3,000 units of antitoxin, intraspinally, and 1,500 units, intramuscularly. His maximum temperature was 101, and his pulse was 124.

April 20, cyanosis was marked; he complained of severe pain in the head, and was irrational at intervals. Under a local anesthetic he was given 6,000 units of antitoxin intraspinally and 1,500 units intramuscularly. His maximum temperature was 102, and his pulse 136.

April 21, his respirations and color were very bad, the pulse thready. His maximum temperature was 101, and his pulse 136.

As there seemed less rigidity, April 22, the patient was given 4,500 units of antitoxin by the intramuscular route only. About three hours later he suddenly developed a respiratory and laryngeal spasm; his face turned almost black, the eyes protruded, and the hands and arms appeared mottled. A pulse was scarcely perceptible. Nothing else being immediately available, a penknife was used to open the veins in the arms, and about 24 ounces of blood were removed. The patient had no lower teeth and as, in the trismus, the upper teeth had become embedded in the lower gum, two upper front teeth were immediately pulled out. This opened up a passage way for an oxygen tube. The spasm passed off and the patient continued to improve the rest of the day. His maximum temperature was 100.2, and his pulse 180.

He could open his jaws about one-quarter inch the next day, April 23. There appeared a slight urticarial rash, and cyanosis seemed less marked. The recti were still tense. His maximum temperature was 100.2, and his pulse 136.

May 1, the patient had made progress, improving steadily though slowly. He was now quite rational and was sleeping better. His temperature had been normal for four days. He was given 1,500 units of antitoxin, May 1, and no reaction was felt. For a few days one eye had been showing a bad conjunctivitis with some iritis.

By May 8 the general condition had greatly improved, though the eye condition was still bad and some facial twitching persisted.

By May 22 the patient was walking a little, the facial twitching had almost ceased, and his eye appeared to be improving.

July 1. the patient, who was gaining in weight and relatively very fit, was boarded for invaliding to Canada.

Relapse.—This began while the patient was on ten days' leave of absence, and when he returned to this hospital, August 9, he had marked rigidity of the jaw muscles, the masseters and pterygoids being mostly affected. The teeth—a new set of false ones—were firmly clenched together. There was slight general stiffness, occasional clonic contractures in the infra-orbital region, and an exaggeration of the deep reflexes. While away he had had some electrical treatment, and from his report evidently showed a hyperexcitability to galvanism and faradism. In this hospital, on his return, he was given 4,500 units, subcutaneously, of tetanus antitoxin and put on 15 grains of chloral three times a day. He was extremely nervous about his condition. His temperature was 99.7, and his pulse 106.

August 10, the patient was able to open his jaws about one-half inch, and his general condition seemed improved. He had a little difficulty in swallowing. He was given another 4,500 units of antitoxin intramuscularly, with no reaction following. His temperature was 98, and his pulse 86.

August 15, the patient still had some rigor of the muscles of the neck which he said made swallowing difficult. He was given 4,500 units of antitoxin intramuscularly. There was no reaction. His temperature and pulse were normal.

August 23, he was given 3,000 units intramuscularly with no reaction following.

August 25, the jaws opened freely and the general stiffness of the body was gone.

September 19, the patient left for Canada. His general condition was good, and he had no pain, stiffness nor twitching. His nervousness, too, had almost disappeared.

In the first case the temperature showed two steeples, reaching 104. These followed antitoxin inoculations. At no other time in either case did the temperature rise above 102.5. It is felt now by us that in the first case in the first attack fewer inoculations might have been given without harm in treatment or delay in recovery.

On the case sheets accompanying these men from the hospital it was suggested that they again be given subsequent inoculations of prophylactic sizes, as it is evident enough that even attacks of long-delayed tetanus, accompanied by therapeutic doses of antitetanic serum in large quantities, will not always confer immunity for more than a few months. In view of the diverse ways of tissue change, reorganization and destruction with a subsequent opening up of sources of buried infection, and in view of the uncertainty in the race for supremacy between an organism or its toxin against its antibodies, one wonders just when the last inoculation of antitoxin against this attenuated organism should be discontinued. Semple, in 1891, implanted tetanus bacilli on two pens, and in 1902 and in 1909 succeeded in getting pure growths from each one. This shows how long the organism may remain active.

CONCLUSIONS

1. The incidence of tetanus may be markedly delayed.

2. Relapses may occur after attacks of delayed tetanus.

3. The premonitory symptoms of tetanus are localized to the area of the wound and may be difficult to recognize, as has been pointed out in recent A. C. I. memoranda.

4. The relapse is not so long or so severe as the first delayed attack, which may be followed by myolgic symptoms lasting for weeks and months.

There arises the question of excision of the focus, even when there may be no foreign body, as a precautionary measure against tetanus.

Real Disinfection.—More labor, more soap and hot water, less smell, less spray, less camouflage.—*Weekly Bulletin*, Department of Health, New York City.

THE FAILURE OF A BACTERIAL VACCINE AS A PROPHYLACTIC AGAINST INFLUENZA

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WASHINGTON, D. C.

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Assistant Surgeon, United States Public Health Service
AND
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The necessity for accurate, controlled observations on preparations that are used as prophylactic agents for influenza is our reason for presenting the subjoined data.

The bacterial vaccine used in the present investigation was kindly furnished by Dr. F. O. Tonney, chief of the laboratory of the Chicago Health Department. While we are not intimately acquainted with the process of the preparation of the vaccine, we believe that it is an agent that should exhibit the immunizing properties, if any exist, of the micro-organisms used in its preparation.

Each cubic centimeter contains, approximately:

B. influenzae	500,000,000
Pneumococci Type I	500,000,000
Pneumococci Type II	500,000,000
Pneumococci Type III	500,000,000
Pneumococci Type IV	1,500,000,000
Streptococcus hemolyticus	1,000,000,000
Staphylococcus pyogenes-aureus	500,000,000

Two or more strains of each organism were used.

The dose used was 0.5 c.c. at the first injection, 1 c.c. at the second and 1.5 c.c. at the third. The interval between the injections was forty-eight hours.

The persons vaccinated were patients at a state institution for the insane. Only patients of 41 years of age or under were vaccinated, as it was anticipated that if influenza appeared in the institution the great majority of cases would be in persons in this age group, and furthermore there was not sufficient vaccine at hand to provide material for a larger number of persons.

In each ward of the hospital a list was made of all patients aged 41 or under, and each alternate patient was vaccinated, the remainder being considered as controls. Each group numbered 390. The vaccination was completed November 15, and fortunately the institution remained free from influenza until November 26, when cases began to appear, although at this time the epidemic had almost disappeared from the community at large. The cases were clinically like those that have been observed elsewhere, and there was the usual percentage of severe cases and of cases with serious pulmonary complications, some terminating fatally.

The accompanying tabulation shows the results in the two groups up to Dec. 9, 1918.

INCIDENCE OF INFLUENZA AND PNEUMONIA IN THE VACCINATED AND THE CONTROLS

	Vaccinated	Not Vaccinated
Persons in group	390	390
Number developing influenza	119	103
Number developing pneumonia	23	17
Deaths	10	7

It appears clear from the evidence afforded by these observations that no protection was afforded by the vaccine.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

EMETINE BISMUTH IODIDE.—Emetinae Bismutho-Iodidum.—Emetine Bismuthous Iodide.—Bismuth Emetine Iodide.—A complex iodide of emetine and bismuth, containing from 17 to 23 per cent. of anhydrous emetine and from 15 to 20 per cent. of bismuth.

Actions and Uses.—Emetine bismuth iodide has the action of emetine, but when taken by the mouth, on account of its insolubility, it is less likely to cause vomiting than the soluble salts of emetine administered orally.

It has been used with apparent good results in the treatment of chronic cases and carriers of amebic dysentery, even where the hypodermic administration of emetine had failed.

Dosage.—The commonly used dose has been 0.2 Gm. (3 grains) daily for four days, either in a single dose at the midday meal or in divided doses. The drug should be given as dry powder, enclosed in capsules or cachets as desired, or in the form of pills or capsules which resist disintegration in the stomach.

Emetine bismuth iodide is an odorless, orange-red powder having a slightly bitter taste.

It is but slightly soluble (with decomposition and liberation of emetine) in water, and dilute acids. It is decomposed by alkaline liquids and by strong acids.

Shake 0.1 Gm. of emetine bismuth iodide with 10 Cc. of tenth-normal hydrochloric acid volumetric solution during fifteen minutes. Filter and dilute 1 Cc. of the filtrate to 100 Cc. To a 5 Cc. portion add 1 drop of mercuric potassium iodide test solution, shake and allow to stand one minute. No distinct milkiness or turbidity should appear.

When assayed by the following method, emetine bismuth iodide contains from 17 to 23 per cent. of anhydrous emetine and from 15 to 20 per cent. of bismuth.

To about 0.5 Gm., accurately weighed, of emetine bismuth iodide in a glass stoppered flask add 10 Cc. of water and 3 Cc. of ammonia water, shake and allow to stand ten minutes. Add 50 Cc. of ether to the flask, shake for ten minutes and then shake every ten minutes during two hours. Decant 25 Cc. of the ethereal layer into a 25 Cc. graduated flask. Filter this through a pledget of cotton into a small beaker. Wash the flask and filter with ether. Allow the ether to evaporate spontaneously and dry over sulphuric acid. Take up the alkaloid with fiftieth-normal sulphuric acid volumetric solution and titrate back with fiftieth-normal sodium hydroxide volumetric solution using cochineal as an indicator. Each Cc. of fiftieth-normal sulphuric acid volumetric solution consumed is equivalent to 0.0048 Gm. of anhydrous emetine.

Place the flask, containing the residue from the emetine determination, upon the water bath and allow the remaining ether to evaporate. Transfer the aqueous liquid and precipitate to a beaker rinsing the flask with a few Cc. of concentrated hydrochloric acid. Add about 30 Cc. of concentrated hydrochloric acid to the beaker and boil. Dilute to about 300 Cc., again heat to boiling and filter. Add ammonia water until a slight turbidity appears. Add hydrochloric acid drop by drop until the solution just becomes clear. Heat to boiling, add 50 Cc. of 10 per cent. ammonium phosphate solution and boil for several minutes. Let stand for one-half hour. Transfer the precipitate to a tared Gooch crucible, which has been strongly heated for one hour in a nickel crucible before being weighed. Wash with hot water, dry, and heat in a nickel crucible to constant weight. Each Gm. of bismuth phosphate ($BiPO_4$) corresponds to 0.6863 Gm. of bismuth.

Emetine Bismuth Iodide-Abbott.—A brand of emetine bismuth iodide complying with the New and Nonofficial Remedies standards.

The Abbott Laboratories, Chicago. No U. S. patent or trademark.

Bismuth Emetine Iodide-Mulford.—A brand of emetine bismuth iodide complying with the New and Nonofficial Remedies standards.

The H. K. Mulford Co., Philadelphia. No U. S. patent or trademark.

Cachets Bismuth Emetine Iodide-Mulford, 2 grains.—Each cachet contains bismuth emetine iodide-Mulford 0.13 Gm. (2 grains).

CREOSOTE CARBONATE (See N. N. R., 1918, p. 87).

Creosote Carbonate-S. & G.—A brand of creosote carbonate, U. S. P.

Manufactured by Schering & Glatz, Inc., New York.

GUAIACOL CARBONATE (See N. N. R., 1918, p. 87).

Guaiacol Carbonate-S. & G.—A brand of guaiacol carbonate, U. S. P.

Manufactured by Schering & Glatz, Inc., New York.

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SATURDAY, DECEMBER 14, 1918

THYROID TOXEMIA AND EXOPHTHALMIC GOITER

Exophthalmic goiter has long been ascribed to a condition of hyperthyroidism despite the difficulties of interpretation which this hypothesis entails. Toxic symptoms, even including exophthalmos, can be induced by ingestion of large quantities of thyroid extract. This well established fact is, perhaps, the most compelling indication for the hyperthyroid theory. Nevertheless it has not sufficed to establish any acceptable or effective uniformity in the mode of treatment; and the dissatisfaction with the attempts to explain all the varied symptoms of exophthalmic goiter as the outcome of hyperactivity of the endocrine glands is manifest in current discussions of the pathogenesis and therapy of this malady.

Reviewing the criticisms of the theory of hyperthyroidism in relation to so-called exophthalmic goiter, Janney[1] has reminded us that the typical exophthalmic goiter contains only from a fiftieth to a twentieth of the total active iodin present in normal thyroids; whereas more, not less, iodin might reasonably be expected to occur in hyperfunctioning glands. Exophthalmic goiter has been reported not infrequently in families having hypothyroid members; sometimes both kinds of symptoms—supposedly hyperthyroid and hypothyroid—are observed in the same person.[2] Contrary to the implications of the hyperthyroid theory, cases of exophthalmic goiter without tumor are not extremely uncommon. Despite the theory, thyroid medication has been reported to benefit some patients suffering from the disease. Finally, similar metabolic disturbances may be present in both alleged hyperthyroid and hypothyroid conditions; the blood picture of exophthalmic goiter is practically identical with that of myxedema and cretinism, so that, as Janney comments, if these conditions are diametrically opposed, such a striking similarity in the metabolic and hematologic findings would scarcely be expected.

Accordingly, Janney[1] has proposed to discard the seemingly inadequate hyperthyroid explanation and substitute for it "dysfunction" of the thyroid to explain the phenomena. In the light of this we can now understand that some of the symptoms of exophthalmic goiter—the thyroid enlargement, cutaneous symptoms, scleroma, osseous changes, and special metabolic manifestations, such as hypoglycemia[3]—are identical with those of a hypothyroidism attributable to a poorly functioning gland. They are truly symptoms of thyroid deficiency which have usually been disregarded in the symptomatology. The more familiar manifestations—psychic stimulation, tremor, tachycardia, increased basal metabolism, etc.—are toxic symptoms which Janney assigns to the liberation of intermediate products of poisonous nature, perhaps owing to the incapacity of the glands to produce the normal thyroid hormone. In exophthalmic goiter, then, a toxic substance is circulating in the system. With a defective endocrine secretory function postulated, it becomes evident how hypothyroid and toxic symptoms may be discovered concomitantly.

With this tentative explanation it becomes clear, furthermore, how clinical improvement may follow suitable—not excessive—thyroid dosage in some cases, particularly when the thyroid deficiency is the etiologically prominent though perhaps not symptomatically conspicuous factor. It is also evident, on the other hand, that the introduction of a normal hormone from without to a dysfunctioning as well as underfunctioning endocrine organ "may not necessarily lead to a cessation of the chemopathologic processes causing the toxic symptoms" of exophthalmic goiter. Probably thyroid treatment of these toxic cases is inadvisable; but when the deficiency symptoms appear, thyroid therapy may actually be indicated,[4] despite the objection which the still current hyperthyroid hypothesis interposes. Is it too much to expect that the stimulus of Janney's recently expressed views[1] will lead to new clinical and therapeutic investigations untrammeled by the handicap of preconceived notions?

1. Janney, N. W.: Studies in Thyroid Therapy: The Effects of the Thyroid Hormone as Determined by a Clinical, Metabolic and Dietetic Investigation: New Points of View on Thyroid Function in Health and Disease, Arch. Int. Med., August, 1918, p. 187.
2. Bertine, E.: Med. Rec., New York, 1916, **90**, 895.
3. Thyroid Functions and Therapy, editorial, The Journal A. M. A., Nov. 30, 1918, p. 1826.
4. Halverson, J. O.; Bergeim, Olaf, and Hawk, P. B.: A Metabolism Study of Goiter, with the Effect of Thyroid and Thymus Treatment, Arch. Int. Med., December, 1916, p. 800.

THE MINIMAL FAT RATION

During the war the reminder to "save fats" confronted the American citizen many times a day in the form of public announcements through placards, billboards and popular literature, so that it naturally became a part of his war-time creed. One reason for heeding the admonition was furnished by the experience of persons who had been in Europe since the beginning of the war. Many of them were obliged to live on a scanty allowance of fats, and they have

reported how disagreeable the deprivation had become. If we may believe the conclusions of extremely careful observers, the lack of fat was perhaps the cause of much of the dietary discomfort in Germany and the element that made the German most dissatisfied with his rations. Indeed, we are told that even when the diet was sufficient, it was not satisfactory if very low in fat.

The apparent reasons for this need not be detailed in this connection. In part we must reckon with the derangement of the dietary habits of people accustomed to liberal supplies of fat. Lack of them alters profoundly the cuisine, the mode of preparation and flavor of familiar items of the diet. Psychologic factors are brought into play as soon as the eating habits of persons are considerably modified. From a more purely physiologic standpoint it must be remembered that the fats are the most concentrated by far among all the foods. They produce a peculiarly satisfying effect, expressed in the layman's statement that they "stay by" one and stave off the feeling of hunger.

By way of contrast and contrary to such extolled virtues of fats, it has recently been suggested that these foods may for the most part be dispensed with, without serious detriment to adult man.[1] In seeking a rational course we may expect to find wisdom in the proposals of the Interallied Scientific Food Commission, of which the American representatives were R. H. Chittenden and Graham Lusk. This group of representative physiologists concluded that the desirable daily minimal ration of fat for an average man should be 75 gm., or 2⅝ ounces. This is considerably below the ascertained intake of men at hard work in cold climates. American lumbermen consume up to 388 gm. (13½ ounces) a day, and Swedish woodcutters from 7 to 13½ ounces, while the ordinary European is content with quantities varying from 1½ to 5½ ounces.

According to the *British Medical Journal,* Starling, who is also a member of the Interallied Commission, has reached the conclusion that although, strictly speaking, there is no evidence for an absolute physiologic minimum of fat in an otherwise abundant diet, the development of the human alimentary canal makes it necessary in practice to supply a considerable proportion of fat in food. In the diet of the infant at the breast, fat gives more than 50 per cent. of the total energy, and the child requires 2 ounces a day of fat up to 10 years. It appears to the *British Medical Journal* that the minimal figure for adults, given by the Scientific Commission, may be diminished without serious detriment to the health of the individual, though probably not without inconvenience and diminution of efficiency, but that it may be considerably increased without interfering with efficiency or with health.

1. The Daily Press and the "Futilities of Contemporary Science," editorial, THE JOURNAL A. M. A., Sept. 28, 1918, p. 1060.

THE PROGRESS OF PREVENTIVE MEDICINE

The most outstanding feature of the war from the medical standpoint has been the really remarkable results obtained in the prevention of disease. War on an unparalleled scale has been going on for more than four years, waged under conditions in themselves calculated to initiate and spread contagious diseases; yet with the exception of typhus fever in Serbia and the recent epidemics of respiratory disease there have been no extensive epidemics such as have occurred in previous wars. Typhoid fever which, up to the time of the Russo-Japanese War, had been the scourge of armies in the field, has been almost a negligible quantity. In the Boer and Spanish-American wars, typhoid killed and incapacitated thousands. In the Russo-Japanese War the real beginning was made and typhoid checked. In the war just over, it has been entirely robbed of its sting. As with typhoid, so with the other war pestilences. Trench fever after a short time was brought under control through scientific investigation. It has been not only by preventive measures in warding off epidemics but also by close attention to personal hygiene that health in the armies on the western front has been maintained at a high standard. Preventive medicine during the past twenty years has progressed apace, and its value has been greatly emphasized by its strong showing in the war. The experience thus gained should now be put to good use in civilian communities.

If masses of men enduring the stress and strain of modern warfare can be kept healthy by the enforcement of sanitary and hygienic measures, it will certainly be reasonable to suppose that the general health of a civilian population cannot fail to be greatly benefited by the adoption of similar methods.

In Great Britain a strong movement is under way for the prompt establishment of a ministry of health. The medical profession and most of the public are convinced, first, that much disease is preventable and, secondly, that it should be prevented. Moreover, members of the medical profession and the people are agreed that this object will be best attained by the formation of a ministry of health. However, the views of the man in the street and of the thoughtful medical man differ somewhat widely as to exactly what the functions of a ministry of health should be. The British public and apparently some medical men are imbued with the idea that such a ministry will provide the machinery whereby the sick may be treated at the cost of the state and that physicians engaged in this work will be a species of government servant. The medical profession, as a whole, on the other hand, regards the matter from quite a different aspect. It is recognized that a national department of health will be concerned chiefly with preventive medicine, and in the opinion of perhaps the majority of medical

men its ideal form will probably be that of a bureau in which scientific medicine will hold sway and, in consequence, the care for the health of the people will be conducted on strictly scientific lines.

The scope of preventive medicine has widened immensely; it is the branch of medicine fraught with almost unlimited potentialities and possibilities. Preventive medicine is not now restricted to purely sanitary measures, the supervision of drainage, sewage and water supply, the destruction of disease-bearing insects and so on. As a matter of fact, the science of preventive medicine comprises every method that may prevent disease. Personal and domestic hygiene are factors of the first importance in the improvement of public health. Because preventive medicine covers so much and because it is essential to the happiness and prosperity of a nation, the demand is arising in many civilized countries for the establishment of national departments of health. The only way by which the object can be achieved is by earnest and intelligent cooperation between the general public and the medical profession.

SCURVY AND ANTISCORBUTICS

The evidence that the antineuritic and antiscorbutic properties in foods are not identical, since they behave quite differently toward absorbents, was recently mentioned in these columns.[1] This raises the question as to the comparative etiology of the types of disorder corrected by the use of antineuritic and antiscorbutic foods, respectively. Polyneuritis, as it is exemplified in the disease beriberi, is today admitted to be a dietary deficiency disorder attributable to the lack of a specific vitamin in the regimen. Is scurvy a disease of a different sort, or does it also correspond to the type lately designated as an avitaminosis?

McCollum and Pitz[2] reject the vitamin hypothesis in explanation of the genesis of scurvy. They insist that the disease is the outcome of faulty intestinal conditions; that it is not due to any deficiency in the diet, but rather is the result of chronic constipation caused by the physical texture of a "scurvy-producing" diet. The contention of these investigators is based on observations on guinea-pigs, the classic animals for the production of experimental scurvy. These animals are alleged to need foods that produce a bulky mass of easily eliminated feces. Thus guinea-pigs that die of scurvy generally show an empty stomach and a gorged cecum, we are told; and it is further stated that the scurvy can be both prevented and cured by the administration of laxatives, without any other alteration in the diet.

If the existence of a condition of chronic intestinal stasis is sufficient to account for so serious a malady as scurvy, without taking into account any specific qualities of the food, surely this information is of the first importance for human therapy and prophylaxis. It is hard to believe that the antiscorbutic effect of the conventional small portion of orange juice can reside solely in a laxative effect of this substance. However, contradictory evidence is beginning to appear in the scientific literature. Chick, Hume and Skelton[3] of the Lister Institute of Preventive Medicine in London deny that chronic constipation is a constant concomitant of guinea-pig scurvy. Instances are cited in which modifications in diet, to which no extra laxative effect can be attributed, have cured or prevented the disease. Experiments are also described in which the administration of a laxative alone has failed to cure or prevent scurvy.

To many unbiased students the chief obstacle to the acceptance of a "vitamin hypothesis" for the genesis of scurvy has been the fact that the disease manifests itself even when milk is included in the dietary. Popularly, milk is at present looked on as an exceptionally abundant source of all forms of vitamins. We have already called attention to the researches of Osborne and Mendel[4] showing that milk is not as rich in the water-soluble vitamin as one not familiar with the experimental evidence for this property of the food might assume. Now we are further told by the British investigators that "milk is evidently a food poor in the antiscurvy accessory factor, and a ration large in comparison with that of other antiscorbutic materials is necessary to afford satisfactory protection from scurvy."

As a "working theory," it seems safer at present to postulate that experimental scurvy, such as can be induced in the guinea-pig, is due to the deficiency in the diet of a specific food factor of the vitamin type. The latest investigations lend favor to the hypothesis that it is analogous in etiology and general method of cure with human scurvy. Chick, Hume and Skelton, making application of these facts and the known sensitiveness of the antiscorbutic property of milk to heat, call attention to the risk, in infant feeding with cow's milk, of "tampering with a substance which even in the fresh condition is but feebly antiscorbutic." In order to give the child optimal conditions, it is urged that whenever milk is heated in any way, or dried, an additional source of antiscorbutic vitamin should be provided. Experience points to orange juice as the most suitable source, and the precaution of using it is the wisest measure so long as the scientists disagree.

1. The Nonidentity of Antineuritic and Antiscorbutic Factors in Nutrition, editorial, The Journal A. M. A., Nov. 30, 1918, p. 1826.
2. McCollum, E. V., and Pitz, W.: Jour. Biol. Chem., 1917, **31**, 229.
3. Chick, Harriette; Hume, Eleanor M., and Skelton, Ruth F.: The Antiscorbutic Value of Cow's Milk, Biochem. Jour., 1918, **12**, 131.
4. Osborne, T. B., and Mendel, L. B.: Milk as a Source of Water-Soluble Vitamine, Jour. Biol. Chem., 1918, **34**, 537. More Milk for Vitamins, editorial, The Journal A. M. A., Nov. 9, 1918, p. 1582.

Nonessential Consumption.—The best definition that I have heard of nonessential consumption is "all consumption not required for maintaining physical efficiency."—H. G. Moulton, *Economist.*

Current Comment

THE GOVERNMENT AND THE HEALTH OF WORKERS

The economic independence of a country depends largely on the efficiency of its production. The efficiency of modern industry has resulted from the development and wise use of such factors as raw materials, machinery, production processes, transportation, trade relations and the like. A still greater efficiency will come when the same careful attention is given to human beings as factors in production. Scientific methods are being applied to reduce wastes to a minimum; and yet there are no wastes comparable in value and costliness with the waste of labor turnover. Though war is the arch destroyer, happily it compels conservation and construction. America's participation in the war has made us realize the value of human resources. Yet even here we have been more concerned about aeroplanes or shells that were found defective than about the hundreds of thousands of young men whom our draft boards found unfit for military service. Our industrial army is recruited from the same population as are our soldiers and sailors. Physical defect lessens the efficiency of a working man quite as it does that of a fighting man. Of course, a physically handicapped man who cannot be safely used in the Army may be efficiently placed in industry, but placement is another of industry's problems awaiting solution. The federal government is sensitive to the urgency of the problems relating to the health and physical fitness of working people and has created in the Department of Labor a Working Conditions Service, one division of which is cooperating with the United States Public Health Service in a study of industrial health problems.[1] The health hazards of modern industry present a much more difficult problem than do the accident hazards. The economic losses due to illness and decreased physical energy far outweigh those caused by accidents. It is not enough to discover the diseases directly traceable to occupation and to develop means for their prevention. There is the far more delicate and difficult task of determining the relation between health and efficiency and of preventing waste by promoting health. Extensive research should be, and we believe is, an essential part of the program that the government contemplates. Careful study should be made of plant sanitation, of the health of employees, of the medical work now being done in industry, of occupational injuries, of the relation of hours of labor to health and production, and of provisions for safety. Out of this effort ought to come established scientific principles on which the working conditions of the future may be based. We must not, however, lose sight of the fact that many of the defects of adults result from remediable conditions of children. It is to be hoped that in a comprehensive study of so important a question as the health of working people, the government will continue to give especially careful consideration to the bearing that the hygiene of childhood might have on the health and efficiency of our adult population.

1. General News, this issue, p. 2008.

PRACTICAL ECONOMY

Last year, attention was called editorially to the large increase in the cost of production of THE JOURNAL on account of abnormally high prices of paper, supplies, labor, postage, etc. In addition, letter postage increased 50 per cent. To quote: "Under the new postage rate the cost for sending the customary bills for Fellowship and subscriptions and later receipts would total over $4,000. One half of this can be saved if each Fellow and subscriber will remit without being individually notified by mail. It is believed that many will gladly do this. Under the circumstances, such notification will not be sent on the first of the year as heretofore." In lieu of sending bills, a remittance slip was inserted in THE JOURNAL. The result was most satisfactory. More than 20,000 sent in their dues and subscriptions without waiting for the bill. This year the same plan will be followed and next week a slip will be inserted in THE JOURNAL.

THE NATIONAL BOARD OF MEDICAL EXAMINERS

During the past two weeks the National Board of Medical Examiners[1] held its sixth examination, conducting it simultaneously in New York and Chicago. In Chicago, out of fifty-eight who applied—mostly interns in hospitals—only thirteen appeared to take the examination. The explanation is that these interns could not leave their hospital duties for the time required, and that substitutes for the hospital duties could not be obtained. That so few recent graduates in medicine avail themselves of the privilege of taking this examination is surprising, since in after years the National Board's certificate is sure to mean much to them. This certificate has already received recognition, either by board rulings or by amendments to the medical practice acts, in eleven states;[2] and in several others, efforts to amend the practice acts will soon be made. The holder of this certificate is eligible for the Medical Corps of the United States Army and the United States Navy, subject only to his passing the required physical examination. As a result of the war there is bound to be a closer union between the medical men of the Allied nations, making it probable that in time this certificate will receive recognition in foreign countries. Even now, the National Board is planning to make a trip to France, where the examination of a number of American physicians can be witnessed by representatives of England, France and Italy, with the hope that, based on the certificate of this board, reci-

1. A descriptive statement regarding this board is contained in the Report of the Council on Medical Education to the House of Delegates of the American Medical Association. See THE JOURNAL, June 15, 1918, p. 1846.

2. These states are Colorado, Delaware, Idaho, Kentucky, Maryland, New Hampshire, North Carolina, North Dakota, Pennsylvania, Rhode Island and Vermont.

procity in medical practice can be arranged with those countries. The certificate already stands as a badge of merit to its possessor. Up to, but not including, the present examination, the board has examined ninety-three applicants, of whom seventy-two passed and twenty-one (22.6 per cent.) failed. This high percentage of failures shows at once the thorough character of the examination. For, considering the fact that only graduates of Class A medical schools are admitted to the examination, this percentage of failures is high. Applicants must also have completed an internship in a hospital.

THE CITRIC ACID IN MILK

"Milk is vital to national health and efficiency." We can conserve wheat and meat, sugar and fats, and be none the worse for it, but we must use milk, says the Food Guide of the United States Food Administration.[1] The chemist is still far from knowing all about this unique food. Only a few persons adequately realize that, in addition to the familiar nutrients, milk contains in small quantities a considerable number of organic substances. Thus there are phosphatids[2] and those subtle, little understood constituents at present termed vitamins. It is thirty years since citric acid was discovered as a normal constituent of cow's milk.[3] Although the substance is often mentioned in textbooks on the chemistry of milk, the statements usually made are of the vague sort that characterize information transmitted in the traditional way. Of the accuracy of the assertion that citric acid is present in milk there can no longer be any doubt. At the laboratory of agricultural chemistry in the University of Wisconsin, Sommer and Hart[4] have recently isolated and identified the compound anew, and have ascertained the content to amount to approximately 0.2 per cent. of the milk, or 2 per cent. of the milk solids. Citric acid is a recognized constituent of various "acid" fruit juices and vegetables, the familiar antiscorbutic properties of which have actually been ascribed to it.[5] Sommer and Hart have pointed out that if citric acid actually is an antiscorbutic and if there was a decrease in the content of this acid on heating milk, this fact might be used to explain, as often stated, why heated milk should be more conducive than raw milk to the production of scurvy. However, the experiments show that citric acid is not destroyed in the heating of milk even in an autoclave at 15 pounds pressure for one hour. Furthermore, the citric acid salts of milk are not changed to an insoluble form on heating. Thus the question of the physiologic function of citric acid in the diet remains unanswered.

1. This excellent booklet, entitled "Food Guide for War Service at Home," was prepared under the direction of the U. S. Food Administration, with a preface by Herbert Hoover, and is published by Charles Scribner's Sons, New York, 1918.

2. The Lecithins of Milk, editorial, The Journal A. M. A., Nov. 13, 1915, p. 1734.

3. Soxhlet, F., and Henkel, T.: München. med. Wchnschr., 1888, **35**, 328.

4. Sommer, H. H., and Hart, E. B.: Effect of Heat on the Citric Acid Content of Milk, Jour. Biol. Chem., 1918, **35**, 313.

5. Funk, Casimir: Jour. State Med., 1912, **20**, 341. Gerstenberger, H. J.: Am. Jour. Med. Sc., 1918, **155**, 261.

Medical Mobilization and the War

Personnel of the Medical Corps

For the week ending December 6, there were in the Medical Corps 31,104 officers, a decrease of ninety-three since the previous week. This personnel includes three major-generals, five brigadier-generals, 205 colonels, 441 lieutenant-colonels, 2,426 majors, 10,103 captains and 17,921 lieutenants. There were in active service 30,379, a decrease of twenty-nine since the previous week. Discharges to date include 3,674 officers.

Promotions for Medical Officers

On December 3 Col. Walter D. McCaw and Major-Gen. Robert E. Noble were nominated for brigadier-general in the Medical Corps of the Regular Army. The rank of major-general held by Brigadier-General Noble was for the period of the emergency only.

Field Hospital Arrives in Russia

Field Hospital and Ambulance Company No. 4, commanded by Major John H. H. Scudder, M. C., U. S. Army,, Philadelphia, which left the Philippines, September 6, for duty with the American Expeditionary Forces in Siberia, arrived in Vladivostok, September 14.

Awards for Heroism

The Distinguished Service Cross has been awarded to Lieut. James G. Hall, M. C., U. S. Army, assigned, 360th Infantry, "For extraordinary heroism in action near Montoville, Sept. 12 and 13, 1918. In spite of severe wounds, including two broken ribs, received in his first day of action, Lieutenant Hall stayed at his post for thirty-six hours administering first aid to wounded throughout the combat. Numbers of lives were saved by his devotion to duty."

Surgeon-General Relinquishes Control of Medical Schools and Intern Service

A circular letter dated December 2 from the Surgeon-General to deans of medical schools gives notice that the control over them through the Medical Enlisted Reserve Corps has been relinquished. The control was based on the draft, and medical students were enrolled in the Medical Enlisted Reserve Corps so that they might be retained at their studies so long as their scholarship remained satisfactory. The cessation of the draft makes this control no longer necessary and it has been relinquished. It is stated, however, that since students voluntarily enrolled in the Medical Enlisted Reserve Corps "for the duration of the emergency," they will be subject to the terms of their enrolment until it has been officially declared that the "emergency" has ceased. For all practical purposes, however, the students are on the same basis as civilians. It is only "in time of actual or threatened hostilities" that they would be called to active service, the probability of which is so remote that it may be disregarded. The Medical Department surrenders to the schools all supervision over their students from an educational standpoint.

The Surgeon-General has also relinquished the supervision of intern service in hospitals. Attention is called, however, to the fact that, where internships have been approved by the Surgeon-General, an agreement was entered into between the interns and the hospitals in which they were serving, and that a cessation of supervision by the Surgeon-General will not in any way impair the obligations imposed by these agreements.

Wounded and Sick Soldiers from A. E. F. to Be Placed in Hospitals Near Homes

The Surgeon-General announces that the Hospital Division has perfected plans for the care of sick and wounded soldiers from overseas in hospitals in the sections from which they were inducted and which will not be more than 300 miles from the relatives of the patients. The Hospital Division now has seventy-five of these hospitals with a capacity of 104,231 beds which were turned over to the Surgeon-General by the general staff; these do not include the fifteen hospitals

located at the ports of debarkation at New York and Newport News which have a bed capacity of 22,066.

These hospitals are located in sixteen districts as follows:

No. 1.—General Hospital No. 10, Boston, Mass.; General Hospital No. 16, New Haven, Conn.; General Hospital, East Norfolk, Mass.; General Hospital No. 30, Plattsburg Barracks, N. Y.; Base Hospital, Camp Devens, Mass.

No. 2.—General Hospital No. 1, Williamsbridge, N. Y.; General Hospital No. 38, East View, N. Y.; Base Hospital, Camp Upton, N. Y.

No. 3.—General Hospital No. 3, Colonia, N. J.; General Hospital No. 4, Fort Porter; General Hospital No. 5, Fort Ontario, N. Y.; General Hospital No. 8, Otisville, N. Y.; General Hospital No. 9, Lakewood, N. J.; General Hospital No. 11, Cape May, N. J.; General Hospital No. 13, Dansville, N. Y.; General Hospital No. 37, Madison Barracks, N. Y.; Base Hospital, Camp Dix, N. J.

No. 4.—General Hospital No. 2, Fort McHenry, Md.; General Hospital No. 7, Roland Park, Md.; General Hospital No. 31, Carlisle, Pa.; Walter Reed General Hospital, Takoma Park, D. C.; Base Hospital, Camp Meade, Md.

No. 5.—General Hospital No. 17, Markleton, Pa.; General Hospital No. 22, Richmond, Va.; General Hosiptal No. 24, Pittsburgh, Pa.; Base Hosiptal, Camp Lee, Va.

No. 6.—General Hospital No. 12, Biltmore, N. C.; General Hospital No. 18, Waynesville, N. C.; General Hospital No. 19, Azalea, N. C.; General Hospital No. 23, Hot Springs, N. C.; Base Hospital, Camp Greene, N. C.; Base Hospital, Camp Sevier, S. C.; Base Hospital, Camp Wadsworth, S. C.; Base Hospital, Camp Jackson, S. C.

No. 7.—General Hospital No. 6, Fort McPherson, Ga.; General Hospital No. 14, Fort Oglethorpe, Ga.; Base Hospital, Camp Gordon, Ga.; Base Hospital, Camp Hancock, Ga.; Base Hospital, Camp Wheeler, Ga.; Base Hospital, Camp McClellan, Ala.; Base Hospital, Camp Sheridan, Ala.

No. 8.—Base Hospital, Camp Sherman, Ohio.

No. 9.—General Hospital No. 25, Fort Benjamin Harrison, Ind.; General Hospital, No. 35, West Baden, Ind.; Base Hospital, Camp Zachary Taylor, Ky.

No. 10.—General Hospital No. 36, Detroit, Mich.; Base Hospital, Camp Custer, Mich.

No. 11.—Cooper-Monatha Hotel, Chicago, Ill.; General Hospital No. 28, Fort Sheridan, Ill.; Base Hospital, Camp Grant, Ill.

No. 12.—Army and Navy General Hospital, Hot Springs, Ark.; General Hospital No. 33, Fort Logan H. Roots, Ark.; Base Hospital, Camp Pike, Ark.; Base Hospital, Camp Beauregard, La.; Base Hospital, Camp Shelby, Miss.

No. 13.—General Hospital No. 26, Fort Des Moines, Iowa; General Hospital No. 29, Fort Snelling, Minn.; Base Hospital, Camp Dodge, Iowa.

No. 14.—General Hospital, Fort Bayard, N. M.; General Hospital No. 20, Whipple Barracks, Ariz.; General Hospital No. 21, Denver, Colo.; Base Hospital, Camp Cody, N. M.; Base Hospital, Fort Riley, Kan.

No. 15.—General Hospital No. 16, Corpus Christi, Texas; Base Hospital, Camp Logan, Texas; Base Hospital, Camp Travis, Texas; Base Hospital, Fort Sam Houston, Texas; Base Hospital, Camp MacArthur, Texas; Base Hospital, Camp Bowie, Texas; Base Hospital, Fort Sill, Okla.; Base Hospital, Fort Bliss, Texas.

No. 16.—General Hospital No. 27, Fort Douglas, Utah; Letterman General Hospital, San Francisco, Calif.; Base Hospital, Camp Kearney, Calif.; Base Hospital, Camp Fremont, Calif.; Base Hospital, Camp Lewis, Wash.

The 50,000 wounded which it is expected will be sent to these hospitals at the end of four months will be transported from the hospitals at the ports of debarkation in special hospital trains when unable to travel in Pullman sleepers. There are four of these trains composed of seven cars each with a capacity of 172 to each train. Special hospital kitchen cars, of which there are twenty, will be attached to the Pullmans containing patients.

Since it has acquired the base hospitals the Hospital Division has recommended that the following properties which were to have been used as general hospitals, be returned to their owners:

New Field Museum, Chicago, Ill.
Exposition Park, Rochester, N. Y.
State School for the Deaf, Columbus, Ohio.
Richman Brothers Building, Cleveland, Ohio.
Deutsches Turnverein, Cleveland, Ohio.
High School, Cincinnati, Ohio.
City Sanatorium, St. Louis, Mo.
Ford Building, Milwaukee, Wis.
Brockman Store Building, Milwaukee, Wis.
Badger State Sales Co. Building, Milwaukee, Wis.
Woodstock Apartments, Milwaukee, Wis.
State School for the Blind, and Galloway Hospital, Nashville, Tenn.
Sophie Newcomb School and Tulane University buildings, New Orleans, La.
Byberry Farms, Philadelphia, Pa.
New Orleans Elks' Hospital.
Seaview Hospital, New York City.
Ford Building, Des Moines, Iowa.
St. Catherine's Home, Des Moines, Iowa.
North Brothers Island, N. Y.
Catholic Orphan Society, New York City.

HONORABLE DISCHARGES AND RESIGNATIONS, MEDICAL CORPS, U. S. ARMY

ALABAMA

Ashford—Box, C. C.
Brewton—Farish, L. B.

ARIZONA

Bisbee—Durfee, R. B.
Kingman—White, T. H.

ARKANSAS

Hartford—Butler, V. V.
Little Rock—Ball, W. F.

CALIFORNIA

Loma Linda—Herzer, F. E.
Long Beach—Robinson, T. C.
Los Angeles—Smith, R. N.
Stolz, H. C.
Monrovia—Pottenger, J. E.
San Diego—Magee, A. C.
Wessels, A. B.
Santa Barbara—Luton, G. R.
South Pasadena—Metcalf, C. F.
Whittier—Tebbetts, H. N.
Wilmington—Kay, G. L.

CONNECTICUT

Willimantic—Jenkins, C. A.

GEORGIA

Carrollton—Fitts, C. C.
Columbus—Sappington, J. S.

ILLINOIS

Bible Grove—Webster, E. C.
Chicago—Burk, W.
Sepple, E. G.
Wilkins, C. D.
Dundee—Maha, F. J.
Galesburg—Longbrake, G. A.
Iuka—Carneal, T. E.
Jacksonville—Woltman, H. C.
Rochester—Fortune, H. C.
Roodhouse—Hamilton, L. O.

INDIANA

Bloomington—Holland, J. E. P.
Indianapolis—Jackson, J. L.
Rockville—Sweany, R. B. T.
Terre Haute—Frisz, J. A.

IOWA

Clinton—White, H. A.
Sigourney—Kemp, M. E.

KANSAS

Belle Plaine—Rudolph, J. F.
Independence—Smith, T. E.
Madison—Lose, F. D.

KENTUCKY

Boston—Harned, H. S.
Dublin—Ray, D. H.
Hickman—Hubbard, J. M.

MAINE

South Windham—Moulton, O. C.

MASSACHUSETTS

Palmer—Cheney, H. C.

MICHIGAN

Detroit—Hirschman, L. J.
Flint—Willoughby, L. L.
Mount Clemens—Lenfesty, F. K.
Sturgis—Burdeno, F. R.

MINNESOTA

Duluth—Chapman, T. L.
Minneapolis—Fox, J. M.
Smith, A. E.
Rochester—Bumpus, H. C., Jr.

MISSOURI

Columbia—Shaeffer, W. R.
Crosstown—Garner, K. C.
Moscow Mills—Parker, R. H.
Smithville—Hill, E. C.
St. Louis—Eberlein, E. W.
Stein, W. F.

NEW HAMPSHIRE

Newmarket—Monge, A. J.

NEW JERSEY

Hackettstown—Randall, R. W.
Jersey City—McGiverin, E. D.
Newark—Smith, J. J.
Toms River—Brouwer, F.

NEW MEXICO

Las Cruces—Gerber, C. W.

NEW YORK

Astoria—Brown, L. M.
Bayside—Houghton, H. A.
Brooklyn—Eis, B. M.
O'Reilly, J. A.
Washnitzer, F.
Buffalo—Bauckhaus, H. H.
Lothrop, E. P.
McKee, T. H.
New York—Ellner, D.
Peet, E. W.
Port Henry—Canning, T. H.
Rochester—Lloyd, J. J.
Wolff, W. B.

NORTH CAROLINA

Raleigh—West, L. N.

NORTH DAKOTA

Kenmare—Critchfield, L. R.
Ewing, F.
Kintyre—Simon, J.

OHIO

Barnesville—Sheppard, D. O.
Cleveland—Mahrer, H. A.
Dayton—Courtwright, L. R.
Tiffin—Leister, R. B.
Vanlus—Metzler, W. M.

OREGON

Oregon City—Mount, G.
Portland—Odell, J. M.

PENNSYLVANIA

Beaver—Wilson, F. S.
Bridgeville—Hopper, A. W.
Litita—Yoder, M. H.
Philadelphia—Bricker, S.
Divisson, A. H.
McNeer, R. L.
Pittsburgh—Pool, S. N.
Reading—Gruver, M. E.
Scranton—Cornell, H. D.
Washington—Lynch, H. P.
Webster—Rupert, D. A.
Wilkes-Barre—Collmann, X. K.
Wilkinsburg—Dixon, J. W.
Woodlawn—Bryson, W. S.

SOUTH CAROLINA

Charleston—Mitchell, J. C.
Columbia—Whitten, B. O.
Georgetown—Gaillard, W. M.
Scotia—Lawton, F. A.
Townville—Hobson, J. M.

SOUTH DAKOTA

Langford—Cook, J. F. D.

TENNESSEE

Memphis—Simpson, W. L.

TEXAS

Bells—Shanks, R. C.
Houston—Scott, J. W.
Texarkana—Peterson, A. L.
Weizer—Potthast, O. J.

UTAH

Salt Lake City — Henneberger, C. E.
Hinkley, E. E.

WEST VIRGINIA

Parkersburg—Gaynor, H. E.
Ripley—Rymer, T. E.
Wheeling—Cracraft, L. K.

WISCONSIN

Darion—O'Brien, H. N.
Mosinee—Towle, G. E.

ORDERS TO OFFICERS OF THE MEDICAL CORPS, U. S. ARMY

Alabama

To Camp Devens, Mass., base hospital, from Fort Oglethorpe, Capt. J. H. EDMONSON, Birmingham.

To Camp Sevier, S. C., to examine troops for cardiovascular diseases, from Camp Crane, Lieut. A. L. KELLY, Birmingham.

To Fort Snelling, Minn., from Camp Crane, Lieut. S. C. WOOD, Birmingham.

To Newport News, Va., from Camp Bowie, Lieut. J. T. CALLAWAY, Birmingham.

To Richmond, Va., from Fort Oglethorpe, Capt. A. W. RALLS, Gadsden.

California

To Detroit, Mich., from Camp Crane, Lieut. J. H. SCHAEFER, Los Angeles.

To Lakewood, N. J., for instruction, from Camp Crane, Lieut. A. H. CURRIE, Los Angeles.

To San Francisco, Calif., Letterman General Hospital, from Camp Fremont, Lieut. V. L. ROCHE, San Francisco.

The following orders have been revoked: *To Camp Crane, Pa.*, base hospital from Camp Fremont, Capt. P. PATEK, San Francisco; Lieut. T. L. BLANCHARD, San Jose.

Connecticut

To Camp Beauregard, La., from Fort Oglethorpe, Lieut. W. E. CRAMM, Mansfield Center.

To Camp Sheridan, Ala., to examine troops for cardiovascular diseases, from Lakewood, Lieut. H. A. SOLOMON, Waterbury.

To Fort Sheridan, Ill., from New Haven, Major H. G. MAUL.

District of Columbia

To Plattsburg Barracks, N. Y., from Camp Jackson, Lieut. D. G. DICKERSON, Washington.

To Washington, D. C., Surgeon-General's Office, from Raleigh, Major J. J. KINYOUN, Washington.

Florida

To Camp Sevier, S. C., to examine troops for cardiovascular diseases, from Camp Crane, Lieut. C. R. MARNEY, Tampa.

To Camp Shelby, Miss., base hospital, from Camp Joseph E. Johnston, Lieut. L. F. CARLTON, Tampa.

Georgia

To Fort McHenry, Md., from Camp Crane, Capts. E. G. ADAMS, Greensboro; L. V. McVAY, Salitpa; Lieut. J. A. McGARITY, Augusta.

The following order has been revoked: *To the retired list*, from Fort Riley, Major R. S. WOODSON, Atlanta.

Idaho

To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to his proper station*, from Camp Dodge, Lieut. E. W. FOX, Arco.

Illinois

To Camp Sevier, S. C., to examine troops for cardiovascular diseases, from Camp Crane, Lieut. T. S. HUGGARD, Chicago.

To Camp Upton, N. Y., from Camp Crane, Capt. E. W. POTTHOFF, Oak Park.

To Camp Wadsworth, S. C., to examine the command for cardiovascular diseases, from Camp Jackson, Capt. W. H. BUHLIG, Chicago.

To East Potomac Park, D. C., from Army Medical School, Lieut. J. STEVENSON, Chicago.

To Fort Riley, base hospital, from Fort Oglethorpe, Lieut. J. R. BUCHBINDER, Chicago.

To Fort Sheridan, Ill., from Camp Grant, Lieut. M. B. KARATZ, Chicago.

To Markleton, Pa., from New Haven, Lieut. R. G. PESCHMAN, Chicago.

To Richmond, Va., from Camp Crane, Capt. C. A. ALBRECHT, Chicago.

To Rochester, Minn., Mayo Clinic, for instruction, and on completion, *to his proper station*, from Camp Custer, Capt. A. N. CLAGETT, Chicago; from Camp Grant, Capt. J. H. BRYANT, Galesburg; from Camp Sherman, Capt. W. C. SMITH, Chicago.

To Vancouver Barracks, Wash., as tuberculosis examiner, from Denver, Lieut. V. MAURICAU, Rockton.

To Wichita Falls, Texas, Call Field, from San Antonio, Capt. R. H. KUHNS, Chicago.

The following orders have been revoked: *To Camp Sheridan, Ala.*, base hospital, from Fort Oglethorpe, Lieut. W. H. McCANDLESS, Sterling. *To Camp Zachary Taylor, Ky.*, Lieut. H. A. LONG, Effingham.

Indiana

To Fort Snelling, Minn., from Fort Sam Houston, Lieut. M. S. DAVIS, Marion.

To Garden City, N. Y., as tuberculosis examiner, from New Haven, Lieut. C. J. STEVENS, Rockville.

To following order has been revoked: *To Camp Jackson, S. C.*, from Camp Custer, Lieut. H. H. ISAACS, Tangier.

Iowa

To Detroit, Mich., from Camp Crane, Lieut. W. W. MURPHY, Lewis.

To Fort Des Moines, Iowa, from Fort Oglethorpe, Capt. F. R. HOLBROOK, Des Moines.

Kansas

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Capt. C. S. TRIMBLE, Emporia.

To Detroit, Mich., from Fort Riley, Lieut. W. H. POPE, Selden.

To Topeka, Kan., Washburn College, from Kansas City, Mo., Capt. C. E. COBURN, Kansas City.

Kentucky

To Fort Sheridan, Ill., from Fort Oglethorpe, Capt. J. A. O. BRENNAN, J. D. TRAWICK, Louisville.

To Greencastle, Ind., De Pauw University, from Indianapolis, Lieut. A. STEWART, Frankford.

To Newport News, Va., from Fort Oglethorpe, Lieut. T. M. DORSEY, Louisville.

Louisiana

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Lieut. J. S. DUNN, New Orleans.

Maine

The following order has been revoked: *To Cape May, N. J.*, from Camp Dix, Lieut. C. D. GRAY, Portland.

Maryland

To Camp Meade, Md., base hospital, from Fort Oglethorpe, Lieut. E. G. HALL, Baltimore.

To Camp Sevier, S. C., to examine troops for cardiovascular diseases, from Camp Crane, Capt. H. N. SISCO, Baltimore.

To Fort Snelling, Minn., from Camp Crane, Lieut. A. A. PARKER, Pocomoke City.

To Lakewood, N. J., from Garden City, Lieut. J. T. KING, Jr., Baltimore. For instruction, from Camp Crane, Lieut. F. C. ELEDER, Baltimore.

Massachusetts

To Camp Sherman, Ohio, base hospital, from Fort Oglethorpe, Capt. G. L. VOGEL, Boston.

To Camp Upton, N. Y., from Camp Crane, Lieut. G. A. WILKINS, Revere.

To Camp Zachary Taylor, Ky., to examine troops for cardiovascular diseases, from Lakewood, Lieut. T. E. BUCKMAN, Boston.

To Detroit, Mich., from Camp Crane, Lieut. N. B. McWILLIAMS, Williamstown.

To Lakewood, N. J., from Camp Crane, Lieut. E. A. ADAMS, Newton.

To Plattsburgh Barracks, N. Y., from Camp Jackson, Lieuts. M. W. PECKIN, Marblehead; D. F. DOWNING, Westborough.

To Richmond, Va., from Camp Crane, Lieut. E. J. GRAINGER, Winthrop.

To Walter Reed General Hospital, D. C., for instruction, from Camp Devens, Capt. A. U. F. CLARK, Westboro.

The following orders have been revoked: *To Camp Dix, N. J.*, from Fort Oglethorpe, Lieut. E. R. GOOKIN, Boston. *To Lakewood, N. J.*, from Camp Devens, Major S. J. MIXTER, Boston.

Michigan

To Camp Custer, Mich., Major L. J. HIRSCHMAN, Detroit.

To Camp Sherman, Ohio, from Camp Crane, Lieut. L. J. PINNEY, Detroit; from Camp Perry, Capt. G. J. SCHALLER, Detroit.

To Fort McHenry, Md., from Camp Crane, Lieut. C. E. VREELAND, Detroit.

The following orders have been revoked: *To Camp Abraham Eustis, Va.*, from Fort Oglethorpe, Lieut. H. S. CARR, Niles. *To Camp Lee, Va.*, from Fort Oglethorpe, Lieut. J. H. HOUTON, Flint.

Minnesota

To Camp Sherman, Ohio, base hospital, from Fort Oglethorpe, Capt. L. A. NELSON, St. Paul.

To Fort Sheridan, Ill., from Camp Grant, Lieut. W. O. OTT, Rochester.

To Rochester, Minn., Mayo Clinic, from Camp Crane, Major J. C. MASSON, Rochester. For instruction, and on completion *to his proper station*, from Camp Grant, Capt. C. I. OLIVER, Graceville.

The following order has been revoked: *To Camp Crane, Pa.*, base hospital, Capt. F. M. MANSON, Worthington.

Mississippi

To Fort Thomas, Ky., as surgeon, from Camp Shelby, Lieut.-Col. J. T. AYDELOTTE.

Missouri

To Pittsburg, Kan., State Normal School, from Kansas City, Mo., Capt. R. B. BREWSTER, Kansas City.

To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to his proper station*, from Camp Pike, Capt. P. H. SWAHLEN, St. Louis.

To Salina, Kan., Kansas Wesleyan University, from Kansas City, Mo., Capt. H. D. CARLEY, St. Louis.

To Wichita, Kan., Fairmont College, from Kansas City, Mo., Lieut. W. G. THOMPSON, Holden.

To Wichita Falls, Texas, Call Field, from San Antonio, Lieut. C. C. COATS, Winston.

Montana

To Rochester, Minn., Mayo Clinic, for instruction and on completion, *to his proper station*, from Camp Grant, Capt. J. G. THOMPSON, Helena.

Nebraska

To Camp Zachary Taylor, Ky., base hospital, from Fort Oglethorpe, Lieut. L. L. NELSON, Norfolk.

To Detroit, Mich., from Camp Gordon, Capt. I. S. CUTTER, Omaha.

To Fort Crook, Neb., from Camp Las Casas, Capt. J. A. STRONG, Kearney.

To Fort Snelling, Minn., from Camp Dodge, Capt. J. P. WILLIAMS, Lincoln.

New Hampshire

To Dansville, N. Y., from Fort Leavenworth, Capt. H. W. CLEASBY, Lancaster.

New Jersey

To Camp Upton, N. Y., as camp surgeon, from Camp Dix, Lieut.-Col. L. R. POUST.

To Richmond, Va., from Camp Lee, Capt. C. MILLS, Morristown.

To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to his proper station*, from Camp Custer, Lieut. J. H. LOWREY, Newark.

To Walter Reed General Hospital, D. C., from Hoboken, Lieut. L. P. BELL.

New Mexico

To Dallas, Texas, from San Antonio, Lieut. H. K. RIDDLE, Reserve.

New York

To Boston, Mass., from Camp Crane, Lieut. F. W. PALMER, Buffalo.

To Camp Abraham Eustis, Va., as orthopedic surgeon, from Camp Sherman, Major A. H. PARSONS, Great Neck. As tuberculosis examiner, from Camp Lee, Major F. ARGUS, Buffalo.

To Camp Custer, Mich., from New Haven, Major J. S. BILLINGS, New York.

To Camp Devens, Mass., to examine the command for cardiovascular diseases, from Lakewood, Lieut. L. FRISCHMAN, Yonkers.

To Camp Dix, N. J., from New Haven, Major B. F. KNAUSE, Brooklyn.

To Camp Hancock, Ga., to examine troops for cardiovascular diseases from Lakewood, Lieut. C. E. TUBB, Poughkeepsie.
To Camp McClellan, Ala., to examine troops for cardiovascular diseases, from Lakewood, Lieut. L. L. SHAPIRO, New York.
To Camp Meade, Md., base hospital, from Camp Crane, Capt. H. W. JACKSON, Jr., New York. *To examine troops* for cardiovascular diseases, from Lakewood, Capt. R. G. SNYDER, New York.
To Camp Shelby, Miss., with the board examining troops for cardiovascular diseases, Lieut. L. T. MANN, New York.
To Camp Upton, N. Y., from Garden City, Capt. C. G. O'CONNOR, Brooklyn.
To Camp Wadsworth, S. C., to examine the command for cardiovascular diseases, from Camp Crane, Capt. B. LATTIN, New York.
To Camp Zachary Taylor, Ky., to examine troops for cardiovascular diseases, from Lakewood, Lieut. H. A. COHEN, New York.
To Dansville, N. Y., from Walter Reed General Hospital, Lieut. W. J. A. DONAHUE, Huntington.
To Detroit, Mich., from Camp Crane, Lieut. R. H. OPPENHEIMER, New York.
To Fort McHenry, Md., from Camp Crane, Lieuts. L. J. BUTLER, Albany; P. W. FETZER, New York.
To Fort Snelling, Minn., from Camp Crane, Lieuts. M. L. POLLACK, Staten Island; J. W. W. DIMON, Utica.
To Garden City, N. Y., as tuberculosis examiner, from New Haven, Lieut. G. G. HATZEL, New York.
To Hoboken, N. J., from Camp A. A. Humphreys, Capt. J. C. FISK, New York.
To Lakewood, N. J., from Camp Crane, Lieuts. G. KORNFELD, Brooklyn; J. J. YOUNG, New York. For instruction, from Camp Crane, Lieut. J. W. BURTON, Alpine.
To New York, Bellevue Hospital, as instructor, from Hoboken, Major J. A. HARTWELL, New York.
To Plattsburg Barracks, N. Y., from Camp Devens, Capt. C. R. MARSH, Oneonta; from Camp Jackson, Lieut. P. M. CHAMPLIN, Syracuse.
To Richmond, Va., from Camp Crane, Major H. L. K. SHAW, Albany; from Fort Oglethorpe, Lieut. D. H. MILLS, Oneonta.
To West Baden, Ind., from Fort Oglethorpe, Capt. J. J. O'DWYER, New York.
To White Plains, N. Y., from Camp Jackson, Major R. H. McCONNELL, New York.
The following orders have been revoked: *To Boston, Mass.*, Harvard Graduate School of Medicine, for instruction, from Camp Hancock, Lieut. J. B. L'EPISCOPO, Brooklyn. *To Camp Abraham Eustis, Va.*, from Fort Oglethorpe, Lieut. G. P. MICHEL, Buffalo.

North Carolina

To West Baden, Ind., from Camp Hancock, Lieut. W. MONCURE, Jr., Hamlet.

Ohio

To Camp Crane, Pa., from Hoboken, Lieut. E. B. MALLOY, Akron.
To Camp Dix, N. J., to examine the command for cardiovascular diseases, from Lakewood, Lieut. J. A. GARVIN, Cleveland.
To Camp Sherman, Ohio, base hospital, from Camp Dix, Lieut. A. N. SMITH, Columbus.
To Camp Zachary Taylor, Ky., to examine troops for cardiovascular diseases, from Lakewood, Lieut. E. C. DAVIS, Cleveland.
To Fort McHenry, Md., from Camp Meade, Capt. A. M. STEINFELD, Columbus.
To Fort Riley, Lieut. W. R. CHYNOWETH, Dayton.
To Fort Sheridan, Ill., from Fort Oglethorpe, Capt. R. S. REICH, Cleveland.
To Fort Snelling, Minn., from Camp Crane, Lieut. J. T. KENNEDY, Cincinnati.
To San Antonio, Texas, Brooks Field, from Kelly Field, Lieut. J. M. PUMPHREY, Mount Vernon.
To West Baden, Ind., from Camp Crane, Capt. W. F. LAUTERBACH, Dayton; from Camp Wadsworth, Capt. A. N. WISELEY, Jr., Ada.
The following order has been revoked: *To Camp Crane, Pa.*, base hospital, from Camp Sherman, Lieut. H. SHUBE, Cleveland.

Oklahoma

To Fort Sam Houston, Texas, base hospital, from Camp Bowie, Lieut. W. K. WEST, Oklahoma City.
To West Point, Miss., Payne Field, from Fort Oglethorpe, Capt. D. A. MYERS, Lawton.

Pennsylvania

To Camp Abraham Eustis, Va., as tuberculosis examiner, from Camp Lee, Capt. E. G. WEIBEL, Erie.
To Camp Grant, Ill., as assistant to the camp surgeon, from Fort Benjamin Harrison, Capt. A. H. MOORE, Philadelphia.
To Camp Sevier, S. C., to examine troops for cardiovascular diseases, from Camp Crane, Lieut. E. T. JONES, St. Clair.
To Camp Sherman, Ohio, base hospital, from Fort Oglethorpe, Lieuts. H. R. MATHER, Johnstown; J. M. CONWAY, Pittsburgh.
To Camp Zachary Taylor, Ky., to examine troops for cardiovascular diseases, from Lakewood, Lieut. T. M. MABON, Pittsburgh.
To Detroit, Mich., from Camp Crane, M. B. MAGOFFIN, Pittsburgh.
To Fort Sheridan, Ill., from Fort Oglethorpe, Lieut. F. J. GABLE, Reading.
To Fort Snelling, Minn., from Camp Crane, Lieuts. J. L. ZIMMERMAN, Hershey; D. BEVERIDGE, Washington.
To Garden City, N. Y., as tuberculosis examiner, from New Haven, Lieut. W. C. JOHNSON, Philadelphia.
To Lakewood, N. J., from Camp Crane, Capt. L. M. HARTMAN, Jr., York; Lieut. M. KEMP, Catasauqua. For instruction, Lieut. T. H. BEDROSSIAN, Philadelphia.
To Richmond, Va., from Camp Crane, Lieut. C. A. GUNDY, Lewisburg.
To San Antonio, Texas, Brooks Field, from Kelly Field, Capt. W. S. SHIMER, Philadelphia.
To Walter Reed General Hospital, D. C., from the Surgeon-General's Office, Col. R. H. HARTE, Philadelphia.

Philippine Islands

To Washington, D. C., Surgeon-General's Office, from the Philippine Department, Major C. L. BEAVEN.

Rhode Island

To Camp Abraham Eustis, Va., from Camp Joseph E. Johnston, Major J. F. HAWKINS, Providence.

Tennessee

To Americus, Ga., Souther Field, from San Antonio, Lieut. E. C. SEALE, Nashville.
To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to his proper station*, from Camp Pike, Lieut. O. P. WALKER, Memphis.
To West Baden, Ind., from Camp Crane, Lieut. H. K. ALEXANDER, Nashville.

Texas

To Camp Meade, Md., from Camp Colt, Lieut. O. H. TALLEY, El Paso.
To Dallas, Texas, from San Antonio, Lieut. R. M. MILNER, Yoakum.
To Fort Sheridan, Ill., from Camp Grant, Lieut. H. O. JONES, Denison.
To Fort Snelling, Minn., from Fort Sam Houston, Capt. C. F. CLAYTON, Lubbock.
To Richmond, Va., from Fort Oglethorpe, Capt. S. R. MILLIKEN, Dallas.
To Vancouver Barracks, Wash., as tuberculosis examiner, from Denver, Lieut. C. R. GOWEN, Carlsbad.
To following order has been revoked: *To Camp Bowie, Texas*, Capt. J. A. KYLE, Houston.

Utah

To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to his proper station*, from Camp Pike, Lieut. G. H. CHRISTY, Vernal.

Vermont

To Camp Wheler, Ga., as orthopedic surgeon, from Boston, Lieut. D. R. BROWN, Lydonville.
To Franklin, Ind., Franklin College, from Indianapolis, Capt. N. J. DELEHANTY, Ruthland.
The following order has been revoked: *To Camp Dix, N. J.*, from Fort *Oglethorpe*, Lieut. D. J. CARROLL, Vergennes.

Virginia

To Americus, Ga., Souther Field, from San Antonio, Capt. B. BARROW, Barrows Store.
To Camp Wadsworth, S. C., base hospital, from Camp Crane, Lieut. E. R. FERGUSON, Roanoke.
To Markleton, Pa., from New Haven, Lieut. N. J. GOULD, Norfolk.
To Richmond, Va., from Camp Lee, Lieut. H. D. HOWE, Hampton.
The following order has been revoked: *To Boston, Mass.*, for instruction, from Camp Lee, Lieut. R. J. WILKINSON, Richmond.

West Virginia

To Camp Abraham Eustis, Va., as tuberculosis examiner, from Camp Lee, Lieut. F. W. WIEHE, Wheeling.
To Lakewood, N. J., for instruction from Camp Crane, Lieut. C. P. S. FORD, Hansford.
The following order has been revoked: *To Boston, Mass.*, for instruction, from Camp Zachary Taylor, Lieut. J. C. SCHULTZ, Huntington.

Wisconsin

To Camp Beauregard, La., to examine the command for cardiovascular diseases, from Camp Jackson, Capt. A. J. PATEK, Milwaukee.
To Camp Devens, Mass., base hospital, from New Haven, Lieut. F. M. HARRIS, Fond du Lac.
To Camp Sherman, Ohio, from Camp Crane, Lieut. E. A. GATTERDAM, Wauwatosa.
To Fort Sheridan, Ill., from Camp Grant, Lieut. J. A. HERATY, Milwaukee.
To Liberty, Mo., William Jewell College, from Kansas City, Mo., Capt. W. E. GROUND, Superior.
To Vancouver Barracks, Wash., as tuberculosis examiner, from Denver, Lieut. L. F. RUSCHHAUPT, Milwaukee.
To Walter Reed General Hospital, D. C., for instruction, from Fort Leavenworth, Capt. J. C. ELSOM, Madison.

ORDERS TO OFFICERS OF THE UNITED STATES PUBLIC HEALTH SERVICE

Surg. HUGH S. CUMMING, detailed by the President for duty in Europe to investigate sanitary conditions at ports from which troops will be returned.
Surg. L. P. H. BAHRENBURG, proceed to Jefferson City and Columbia, Mo., and other necessary points to exhibit films in connection with the control of venereal disease.
Surg. HUGH DE VALIN, proceed to Astoria, Oregon, to determine public health value of contemplated improvements.
Passed Asst. Surg. F. A. CARMELIA, proceed to Harrisburg, Pa., for conference relative to discontinuance of influenza control work in the state of Pennsylvania.
Proceed to Wheeling, W. Va., for conference relative to discontinuance of influenza control work in the state of West Virginia.
Passed Asst. Surg. HOWARD F. SMITH, assume charge under Surgeon Frost of epidemiological studies of influenza in the state of Maryland.
Asst. Surg. W. F. WAGENBACH, proceed to Norfolk, Va., for temporary duty.
Asst. Surg. H. S. MUSTARD, proceed to necessary points outside of Philadelphia, Pa., for inspection work in connection with the hygiene and sanitation of the Emergency Fleet Corporation.
Prof. E. B. PHELPS, proceed to Milwaukee, Wisconsin to investigate the pollution by industrial waste the water supply of that city.
Acting Asst. Surg. G. M. CONVERSE, detailed by the President for duty in Europe under Surgeon Cumming to investigate sanitary conditions at ports from which troops will be returned.
Pharm. F. J. HERTY, proceed to the Marine Hospital, Baltimore, Md., for temporary duty.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

DISTRICT OF COLUMBIA

Personal.—Dr. L. M. Hynson is absent from the city on a belated vacation.——Lieut.-Col. E. G. Seibert was home recently on furlough from Mineola, L. I.

New Superintendent for Garfield Hospital.—Dr. A. W. Smith, for the past year or two superintendent of Garfield Memorial Hospital, will be succeeded the first of the year by Dr. Carl S. Keyser of this city.

Address on War Surgery.—Col. Bailey K. Ashford, M. C., U. S. Army, now attached to the general staff, recently addressed the Medical Society of the District of Columbia on the "Histopathology and Treatment of War Wounds." As Colonel Ashford's duties in France took him to all parts of the front and required his study of methods in vogue at all surgical centers his address was of intense interest and seemed to bring the very atmosphere of the war operating room across the sea to his auditors.

Medical Society Election.—The following officers for 1919 were elected by the Medical Society of the District of Columbia at a meeting held December 4: president, Dr. William Gerry Morgan; first vice president, Dr. Ada R. Thomas; second vice president, Dr. A. R. Shands; recording secretary, Dr. H. C. Macatee; corresponding secretary, Dr. J. Russell Verbrycke, Jr.; treasurer, Dr. C. W. Franzoni. The following were elected members of the executive committee for a term of three years: Drs. A. W. Boswell, Philip S. Roy and Charles S. White. Dr. Morgan in a speech of acceptance of the presidency not only expressed his appreciation of the honor involved, but announced his intention of using every endeavor to carry to completion the erection of a home for the medical society. This is a project begun under the presidency of Dr. E. Y. Davidson about two years ago; in spite of the deterrent effect of the war, steady progress has been made in paying for a building site, and there is every reason to believe that the year 1920 will see the society in possession of a home of its own. A very interesting and pleasing incident of the same meeting was the reelection of Dr. C. W. Franzoni as treasurer for his forty-fifth term; the society instructed the secretary to cast the unanimous ballot of the society for Dr. Franzoni and adopted the resolution by a rising vote.

ILLINOIS

Chicago

Personal.—Dr. Edward F. Garraghan has been appointed attending laryngologist at Cook County Hospital, to succeed Dr. Joseph C. Beck, who is at present commandant of the Czecho-Slovak Hospital in Cognac, France.

Tuberculosis Institute Luncheon.—The Chicago Tuberculosis Institute gave a luncheon at the Hotel LaSalle, December 11, at which Dr. Robert H. Babcock, Chicago, presided, and Dr. Donald B. Armstrong, Framingham, Mass., gave an account of the Framingham Community Health and Tuberculosis Demonstration.

Illegal Practitioner Fined.—Dr. Bertha C. Day Raymond of 2675 East Seventy-Fourth Street was arrested by the Department of Registration and Education of the State of Illinois, December 3, on the charge of practicing medicine without a license. She pleaded guilty in the municipal court of Chicago and was fined $25 and costs.

Work Against Drug Traffic.—Indictment of seven alleged dealers in opium and morphin were returned by the federal grand jury, December 6. The indictments were secured by Assistant United States Attorney Epstein, under the Harrison Drug Act, which provides a penalty of five years imprisonment or $2,000 fine. The men indicated are as follows:

Wesley S. Johnson, New York, arrested with 30 ounces of morphin sulphate in his possession.

Thomas Cross, known as "Safety Deposit Tom," because he kept his drugs in various banks; recently served two years in Leavenworth, and now arrested as Johnson's chief aid.

Charles Brown, 644 Narth La Salle Street; an old offender peddling drugs in the north side resorts.

Albert Trilling, nicknamed "Ciggie," concealing drug.

Louis Christian, alias "Whitey," smuggler of drug into the Bridewell through aid of women.

Clarence Safford, also a notorious peddler.

Samuel Shields, an exconvict and drug peddler.

The indicted men are said to have had the city divided into districts for the sale of morphin to drug addicts.

LOUISIANA

State Board to Have Its Own Building.—The state board of health has purchased the property at 422 Chortes Street, opposite the New Orleans Court House, to be used as an annex to the board offices. The building will be romedeled and a laboratory is to be constructed on the roof.

Demobilization Resolutions.—At the meeting of the Orleans Parish Medical Society, November 25, resolutions were adopted petitioning the secretaries of the Army and Navy to consider the shortage of medical men on account of the war needs prior to the signing of the armistice, and the presence and recrudescence of influenza, with the object of demobilizing as expeditiously as may be consistent with the efficiency of the service, as many as possible of the medical officers in camps in this country and abroad.

MARYLAND

Released from Hun Camp.—After being interned in a prison camp at Rastatt, Germany, for nearly six months, Capt. Charles W. Maxon, Baltimore, has been released and has reached the American lines. He states that he was well treated, but said that the Germans were greatly in need of physicians, which condition prolonged his confinement.

Slight Increase in Influenza.—The report of fifty-three new cases of influenza during a period of twenty-four hours showing an increase of twenty-nine compared with the record for the previous twenty-four hours, led Health Commissioner Blake to sound a general note of warning. He states that the situation is not alarming and that all of the cases are mild ones, but warns the public to avoid going recklessly into crowded places as this causes the disease to spread.

Many Wounded Soldiers Arrive at Fort McHenry.—A contingent of 256 soldiers arrived at General Hospital No. 2, Fort McHenry, from overseas, via Newport News. An extra force was added to the receiving ward to tally the records and names of the men. Last week 150 or more men arrived at the hospital from overseas and this week two shipments were received, one of which consisted of 146 men from Newport News, and a contingent of 140 wounded from Hoboken. A majority of these are orthopedic cases and represent a more serious type of wound than the military physicians have been receiving. It is expected that patients will arrive until the hospital is filled to its capacity which comfortably accommodates approximately 1,400 men.

MASSACHUSETTS

Hospital in Nantucket.—The Underwood Memorial Hospital, Nantucket, erected by H. O. Underwood, Belmont, in memory of his wife, has been completed at a cost of $50,000 and given to the town of Nantucket.

Personal.—Fred W. Archer, Boston, has been appointed a member of the State Board of Registration and Pharmacy, to succeed William S. Beyary, Melrose.——Dr. Roscoe D. Perley, Melrose, and Dr. Frank S. Bulkeley, Ayer, have been appointed medical examiners (coroners) for Middlesex County.——Dr. John B. Beebe, Great Barrington, has been appointed medical examiner (coroner) and Dr. Clifford S. Chapin, Great Barrington, assistant medical examiner (coroner) for Berkshire County.——Dr. Joseph C. E. Tasse, Worcester, who has been seriously ill at his home for five weeks, is reported to be improving.

MONTANA

Personal.—Dr. Paul A. Remington, for six years assistant surgeon at the Northern Pacific Beneficial Association Hospital, Missoula, has been appointed chief surgeon of the Northern Pacific Hospital, Tacoma, Wash., the largest maintained by that association, and took charge, September 10, succeeding Dr. Saxe W. Mowers.

Hospital Items.—The new hospital erected by the State University of Montana, at Missoula, at a cost of $7,000, for the use of the S. A. T. C., with accommodation for fifty patients, is now completed. The building is 128 feet wide, and 20 feet in depth, and has four wards, and an isolation ward, beside the necessary offices and service rooms.——The Isolation Hospital, Anaconda, recently completed at a cost of

$11,000, was opened to receive visitors, November 23. The building is in the form of a maltese cross, the administration room being in the center, the arms of the cross forming four isolated wards, each containing accommodation for six patients.

NEW YORK

Weiss Found Not Disloyal.—Dr. George C. Weiss, Mount Vernon, formerly health commissioner of that city, was placed on trial, November 25, for a second time, charged with violation of the espionage law, and was found not guilty. In the first trial the jury disagreed.

Personal.—Dr. Mary T. Greene, Castile, has been appointed a member of the Board of Child Welfare, for Wyoming County, to succeed Dr. Henry E. Pierce, deceased.——Dr. William G. Bissell, Buffalo, on November 21, was elected president of the state board of medical examiners.——By unanimous vote of the city council of Niagara Falls, the bill of Health Officer Scott for $603 due him as registrar of vital statistics was ordered paid.

Hospital Directors Elected.—At the annual meeting of the directors of the Elizabeth A. Horton Memorial Hospital held in Middletown, N. Y., November 25, Dr. Theodore D. Mills, Middletown, was elected president of the corporation which will have charge of carrying out the terms of Eugene Horton's will, regarding the erection of a hospital in memory of his mother and for which he provided a fund of $600,000. Dr. Daniel B. Hardenbergh, Middletown, was also elected a director of the corporation. A committee was also elected to select a site for the institution.

New York City

County Society Election.—At the annual meeting of the Medical Society of the County of New York, held November 25, the following officers were elected; president, Dr. Charles Howard Peck; vice presidents, Drs. Charles H. Chetwood and George Gray Ward, Jr.; secretary, Samuel S. Dougherty; assistant secretary, Dr. J. Milton Mabbott, and treasurer, James Peterson.

Resolutions Regarding Major Bissell.—The executive committee of the Medical Board of Bellevue Hospital, at a meeting held December 3, adopted a resolution setting forth its profound sorrow and regret at the death of Major Joseph Biddleman Bissell, M. C., U. S. Army, chief of the surgical service at Fort McHenry, Md., and visiting surgeon and surgical director of the fourth division of Bellevue Hospital.

Academy of Medicine Elects.—At its anniversary meeting, December 5, the New York Academy of Medicine elected the following officers: president, Dr. George David Stewart; vice presidents, Drs. Reginald H. Sayre and Charles H. Peck; recording secretary, Dr. Royal S. Haynes, and trustee, Dr. Walter B. James. Lieut.-Col. Raffaele Bastianelli, professor of surgery of the University of Rome, was elected to honorable fellowship in the academy.

Injunction Asked.—A permanent injunction has been asked by the head of the Flatbush Chamber of Commerce, restraining the city officials from reopening the Barren Island garbage plant. The argument was supported by an affidavit from the president of the board of trustees from Bellevue and Allied Hospitals, after having discovered the effect that the noxious odors from the garbage plant have had on the patients in the Hospital for Crippled Children, which is located on Rockaway Peninsula.

Life Insurance Presidents Meet.—The Association of Life Insurance Presidents which met at the Hotel Astor, last week, listened to a paper by Major-Gen. William C. Gorgas, read by William D. Wrightson, in which were pointed out the lessons in sanitation that the soldiers of the United States have gained in their camp life. He expresses the conviction that when these men return home they will be desirous of applying these same measures to their home communities in so far as such application is possible. In his opinion the greatest sanitary lesson of the war is the effect of crowding in large units. He suggests that both overcrowding and segregation might be avoided by constructing the cantonments of huts 20 feet by 20 feet in plan containing not more than six men. He believes that the death rate from disease in our Army in this war will be far less than the best death rate that has gone before us—it will probably be somewhere near 9 per thousand up to October 1. After that date there will be an increase over this figure owing to the appearance of influenza in the camps. Another paper presented by Dr. Frederick L. Hoffman on compulsory health insurance showed that this measure had proved a complete failure as a function of the state in Germany.

NORTH DAKOTA

Personal.—Dr. Oliver E. Distad, Williston, who started for China in October and was taken ill with pneumonia at Seattle, sailed for China, November 22.——Dr. A. G. Long, recently appointed acting director of the public health laboratory at the University of North Dakota, Grand Forks, has assumed his new duties. He succeeds Dr. John W. Cox, University, resigned.——Dr. Joseph T. Newlove has been appointed health officer of Minot, to succeed vice Dr. Harry G. Knapp whose term has expired.

OHIO

Protest Against Reduction.—Dr. Walter E. List, superintendent of the Cincinnati General Hospital, has made a protest to Financial Director Holmes against the reduction of $22,000 in the appropriation for the hospital for 1919, as compared with the amount appropriated for 1918.

Physicians' Offices Closed.—The Mayor of Warren, November 25, issued a proclamation ordering the closure of all physicians' offices during the prevalence of influenza. For the time being, excepting emergency cases, persons who desire to consult physicians can see them only by appointment.

Fund Allotted for Health Board.—The United States Public Health Service announced, November 20, that the sum of $51,832.61 had been allotted by the federal government to the state of Ohio, for the use of the department of health in that state, for the prevention, control and treatment of diseases.

To Improve Rural Health Protection.—The legislature will consider plans for reforming the administrative health machinery in small local districts, as the rural districts and small towns of the state are not giving adequate health protection under the existing laws. It is proposed to group the health districts of the state into larger units, and thereby to provide means of employing a sufficient number of competent health workers.

Personal.—Dr. Earl A. Martin, superintendent of the Cincinnati Tuberculosis Sanatorium, resigned, November 30, resignation to take effect as soon as a successor is appointed. Dr. Martin expects to enter the mission field as a medical missionary.——Dr. Oscar H. Sellenings, Columbus, who has been engaged in child welfare work in France under the auspices of the American Red Cross, with headquarters at Marseilles, has returned to the United States.——Dr. Charles B. Finefrock, Port Clinton, has been appointed coroner of Ottawa County, to succeed Dr. Mason J. Skiff, Oakharbor, who has resigned.——Dr. Martin F. Vereker has been elected health officer of Hamilton.

Deprecate Child Labor.—The state department of health and state council of national defense have united in a drive to keep children out of industrial occupation and in school. The officials dwell on the responsibility of communities to provide scholarships or other aid for children financially unable to continue in schools, and on the necessity of teachers making schools attractive to the children. During the war the growing tendency toward the employment of child labor was noted and while the government refused to sanction the employment of children in war work, nonessential industries were beginning to look on children as the reservoir of cheap labor. The war time labor situation had not demanded the employment of children, and with the close of the war the employment of children becomes still more inexcusable.

PENNSYLVANIA

Gift of Scholarship.—The Pennsylvania Training School for Feebleminded Children eventually will receive $5,000 for the maintenance of a scholarship from the estate of the late Benjamin H. Smith.

Venereal Dispensary Opens.—The Department of Health of the Commonwealth of Pennsylvania announces the opening of a genito-urinary dispensary in Shenandoah, under the charge of Dr. Christian Gruhler. The dispensary is open on Tuesdays and Fridays from 8 to 10 p. m.

Personal.—Dr. William H. Emery, Coatesville, while driving from his home toward Downington, November 29, lost control of his car and crashed into a telegraph pole. The machine was demolished and Dr. Emery was taken to the Chester County Hospital suffering from concussion of the brain and serious cuts and bruises.——Dr. Henry J. Bell, Pittsburgh, was attacked by robbers, November 26, and beaten and robbed.

Philadelphia

Receive New Professors.—The Medical Club of Philadelphia gave a reception at the Bellevue-Stratford Hotel, December 13, in honor of Dr. Jay F. Schamberg and Lieut.-Col. J. Torrance Rugh, M. C., U. S. Army, newly elected professors in Jefferson Medical College.

Staff Election.—The staff physicians of St. Mary's Hospital at their meeting, November 23, elected the following officers: Dr. Joseph H. Ross, president; Dr. Louis F. Love, vice president; Drs. William P. Grady and George C. Kieffer, secretaries, and Dr. Ellwood R. Kirby, medical director.

Personal.—Dr. Collin Foulkrod has been elected to fill the vacancy on the staff of the Maternity Hospital caused by the death of Clarence H. Gray.——Major Jackson Stewart Lawrence, M. R. C., attached to the 368th Infantry, colored regiment, was given the distinguished service cross, the highest field honor for bravery, by General Pershing, for saving the life of a negro soldier without regard for his own safety.——Capt. Thomas C. Ross, in command of Ambulance Company No. 110, 103d Sanitary Train, was wounded early in September while giving aid to the wounded under fire.——Dr. William T. Shoemaker, who went to France with Base Hospital No. 10 from the Pennsylvania Hospital, has been made consulting ophthalmologist to all American hospitals in England. Dr. Shoemaker's appointment carries the rank of lieutenant-colonel.

Reconstruction Conference.—A conference under the auspices of the Division of Hygiene and Engineering of the Department of Labor and Industry was held at the Bellevue-Stratford Hotel, December 6. Representatives of the National Association of Industrial Physicians and Surgeons, from all sections of the country, are holding their seventh annual conference in conjunction with the labor and industry meeting. Dr. Francis D. Patterson, Harrisburg, chief of the Department of Hygiene and Engineering of the Department of Labor and Industry, presided. Problems of physical reconstruction and industrial rehabilitation of war and industrial cripples were considered. Major R. Tait McKenzie, formerly of the British army, now director of physical education at Pennsylvania University, read a paper on "Mechanical Aids to Reclamation"; Dr. Alfred Stengel read a paper on "The Reclamation of the Diseased," and T. B. Kidner, vocational secretary of the Invalided Soldiers' Commission of Canada, read a paper on "Vocational Training for the Handicapped."

WASHINGTON

Personal.—Dr. Jerry E. Vanderpool, health officer of Walla Walla and Walla Walla County, resigned, November 30, his resignation to be effective as soon as a successor can be named.

WISCONSIN

Smallpox in Oshkosh.—It is announced that eleven cases of smallpox have been discovered at Oshkosh, seven of which were at first diagnosed as influenza. The seven houses in which these cases were found have been placed under strict quarantine.

College Raised Its Million.—The Marquette University of Milwaukee has succeeded in raising its medical school endowment fund of $1,000,000, one-third of which was donated by the Carnegie Foundation for the Advancement of Teaching. The income from this fund is to go for the salaries of teachers and maintenance and cannot be used for buildings, additional funds for which are now being sought.

Antituberculosis Society Meeting.—The annual meeting of the Wisconsin Anti-Tuberculosis Association was held in Milwaukee, December 13 and 14. The essential subject of discussion at this meeting was the establishing of free and pay tuberculosis clinics in every suitable county in the state. A public health program for the ensuing year was also presented which gave particular emphasis to tuberculosis. The changed conditions, and in particular the uncovering of a large number of cases of incipient tuberculosis in discharged soldiers and draft rejects, have convinced the association that the next link to be formed in the chain of defense against tuberculosis is the dispensary.

CANADA

Plans New Medical Building.—The Faculty of Medicine of Western University, London, Ont., is planning the erection of a new medical college building at an estimated cost of $100,000.

Personal.—Major Thomas D. Archibald has been transferred from the command of the Whitby (Ont.) Military Hospital to the new St. Andrews Military Hospital, Toronto.——Capt. Fred G. Bantling, M.B., Alliston, Ont., is reported to have been wounded.——Dr. Walter S. Downham, who has been acting medical officer of health, London, Ont., since the resignation of Dr. Hibbert W. Hill, has been recommended by the board of control for permanent medical officer of health.

Hospital News.—New regulations have been adopted by the board of governors of the Kingston (Ont.) General Hospital for the reorganization and extension of the visiting staff. The idea is to to make the institution a teaching hospital in connection with Queen's University Medical Department.——The Canadian Hospital ship *Araguya* has begun its tenth voyage to Canada. It is in command of Col. D. A. Whitton, Ottawa.——The Board of Control, Toronto, has recommended a grant of $16,000 for the Hospital for the Incurables.——The new Orthopedic Military Hospital in Toronto will be opened early in 1919, and it is proposed to use it for teaching purposes as well as being the central orthopedic hospital for soldiers in Canada. It is to have accommodation for from 1,500 to 2,000 patients.——The Toronto Free Hospital for Consumptives is seeking a grant of the Toronto Board of Control of $31,000 to clear off the deficit engendered during the last hospital year.——The reception hospital in Toronto has been inspected and reported on by the medical officer of health, Dr. Charles J. C. O. Hastings. He finds that the building is old and dilapidated, and totally unfit for purposes for which it is used. Here have been watched incipient cases of insanity, and it looks as though the city will have to provide better accommodation.

Ontario Medical Practice Act.—The government called the various cults and the representatives of the medical fraternity in Ontario last week for the purpose of discussing the report of the commissioner, Mr. Justice Hodgins. The medical profession was satisfied with the report in general, but proposed, or suggested, the following definition of the practice of medicine: "The practice of medicine shall mean and include the diagnosis, healing, alleviation or attempt to diagnose, treat or relieve any ailment by advice, assistance or any means with or without the use of drugs or mechanical means." The osteopaths thought they should be given a department in the universities of the province, and the power to appoint the instructors in anatomy and physiology. The minister of education asked what a speaker for that body meant when he referred to osteopathic anatomy and scientific anatomy; what was the difference? The reply was that osteopathic anatomy was the scientific anatomy. Col. Alexander Primrose, C.M.G., Toronto, president of the Academy of Medicine, told of his observations in England and France where neither the British nor Canadian forces allowed any one but a qualified surgeon or physician in the C. A. M. C. and the R. A. M. C., as they had specially trained physicians and surgeons for all branches of manipulative surgery. He advised the government to inquire into his statement.

GENERAL

Gorgas in New Activities.—Major-Gen. William C. Gorgas, M. C., U. S. Army, retired, who recently returned from France, will undertake work as director of war field work for the Rockefeller Foundation and will soon sail for Central and South America.

American Association for the Advancement of Science.—The seventy-first meeting of the American Association for the Advancement of Science will he held in Baltimore, Dec. 23 to 28, 1918. The opening general session will be held in McCoy Hall, 311 West Monument Street, December 26, when Dr. Goodnow, president of Johns Hopkins University, will deliver an address of welcome, and Dr. Theodore Richards of Harvard will speak on the conservation of the world's resources. Regular meetings of the sections will be held from Thursday morning, December 26, to Saturday, December 28.

Division of Industrial Hygiene and Medicine.—Physicians, sanitarians and nurses who are desirous of establishing industrial connections may now register for this purpose with the Division of Industrial Hygiene and Medicine. This division, with personnel detailed by the United States Public Health Service, is acting for the Working Conditions Service of the Department of Labor in the investigation and supervision of the health of industrial workers. In connection with these activities the division proposes to carry on a service whereby employers who wish to obtain medical personnel for

their establishments may be put in touch with available physicians, sanitarians and nurses. To facilitate this service a register will be kept by the division, and physicians, sanitarians and nurses desiring to become affiliated with industrial establishments are asked to communicate with the Division of Industrial Hygiene and Medicine, 202 Ouray Building, 805 G Street, Northwest, Washington, D. C., mentioning qualifications, type of industrial connection preferred and salary expected.

Poliomyelitis Report.—The Public Health Service has recently published a report of epidemiologic studies of poliomyelitis occurring in 1916 in New York City and northeastern United States, with intensive studies of the disease in certain cities and counties in New Jersey, Connecticut and Rhode Island. Present knowledge in regard to the epidemiology of poliomyelitis is summarized. The publication is *Public Health Bulletin 91*, by Drs. Claude H. Lavinder, Staten Island, N. Y.; Allen W. Freeman, Columbus, Ohio, and Wade H. Frost, Washington, D. C. Another bulletin of interest from the Public Health Service is *Public Health Bulletin 95*, by Dr. Joseph G. Wilson, New York City, on infectious diseases in children, the study covering about 6,000 cases among immigrant children. The main conclusion reached as the result of this study is that it is practicable to treat contagious and noncontagious diseases in the same hospital and with the same nursing force, and even in the same wards provided the wards are cut up into small cubicles and the proper nursing technic is enforced. There is practically no danger of cross infection.

Influenza.—While a number of communities throughout the United States report the subsidence of influenza and the removal of restrictions, since the last week in November there has been a notable recurrence of the outbreak in a good many states. In many instances it has been found desirable to return to the restrictions with reference to public gatherings, schools, churches, amusements, etc., and in a number of places masks are required in public places. In most instances, it is believed, the disease is not so severe in its nature and the death rate is lower than in the first intense wave of the epidemic, and with the education gained by the public in the former wave less trouble is experienced in handling the disease. Indiana is one of the states which seems to be hit hardest by the recrudescence. Ohio also reports many new cases throughout the state, but with a percentage of fatalities running only about one half that of the earlier outbreak. It is the hope of the authorities in that state that by precautionary measures among the 40 per cent. of the people susceptible to the disease it may be strung out over as long a period as possible, thus causing less disruption of the ordinary routine of business and life in general. Wisconsin, Kansas, Michigan, New York state and Illinois, particularly Chicago, report general increases in the number of cases. *Public Health Reports*, November 29, continues the publication of state summaries of the disease. It is probable that a number of cases of influenza above the normal endemic figures will continue throughout the winter, with a considerable number of pneumonia cases, the regular season for which is just beginning. At the meeting of the American Public Health Association in Chicago during the present week influenza was one of the important topics of discussion.

FOREIGN

Malaria Control on the Island of Cyprus.—On the island of Cyprus an antimalaria campaign has been in progress since 1913. In the annual medical report for the island for 1917 it is said that the number of persons with malaria treated was reduced from 10,035 in 1912 to 2,709 in 1917, and the percentage of large spleens in schoolchildren was reduced from 17.2 in 1913 to 6 in 1917. The work has consisted in cleaning and improving drains and streams, making new drains, filling in, screening or covering wells, stocking wells with fish, filling in or draining pools, cutting and removing grass, etc. Drugs were used to some extent.

CORRECTION

Influenza at Rome.—THE JOURNAL of August 17, in describing the measures taken against influenza in Europe, mentioned the closing of the schools and moving picture shows at Rome. The *Policlinico* commented later on this, that "contrary to the usual accuracy of THE JOURNAL, this news item was without foundation," adding, "And this is the way history gets written." The news item was taken from a foreign journal, but it seems that last summer the epidemic was too mild at Rome for such strenuous measures. The November numbers of our Italian exchanges, however, relate that these very measures were being enforced at Rome at date of writing. History got itself written too previously, it seems, but the facts finally managed to catch up with it.

BUENOS AIRES LETTER

BUENOS AIRES, Oct. 26, 1918.

Epidemic of Influenza

The steamships *Demerara* and the *Infanta Isabel* arrived at Buenos Aires with numerous cases of influenza on board, and there had been several deaths during the voyage. The public health authorities allowed the passengers to disembark without taking any prophylactic measures whatever. Fifteen days later numerous cases of influenza developed in the city, especially in the mail service, in which there were over 100 cases in one day. By another week the infection had spread throughout the entire city thence to numerous points in the interior of the country. It is estimated that there have been 250,000 cases in Buenos Aires alone. Fortunately the disease has been of a mild type, no deaths occurring except nine fatal cases in the Hospital Muñiz. Quite recently the mortality has increased a little, but it is still low. The symptoms are generally headache, pains in the muscles, sore throat, high fever and prostration. In the majority of the cases improvement is evident by the second to the fifth day, but pronounced depression and anorexia are left. The graver cases developed pulmonary or gastro-intestinal symptoms. Almost all the fatalities were from pneumonia or bronchopneumonia. The Pfeiffer bacillus was encountered in most of the cases examined. In the pneumonia cases, it was associated with the pneumococcus.

The indecision of the public health authorities has been the object of much criticism. The Departamento Nacional de Higiene has been without a head for several months.

Infantile Mortality

Under the auspices of the Sociedad Argentina de Pediatria three special meetings have been held to discuss problems relating to infantile morbidity and mortality in Argentina. In the last few years they have presented a certain increase. The mortality of children less than a year old represents 21 per cent. of the total mortality. The figure in reality is low in the capital and on the coast, but it is considerable in the provinces of the interior. It was decided to appoint a special committee to advise the most important measures to be taken.

The University Elections

The curious reform in the statutes of the universities, which has recently received official sanction, accords to the students the right to vote for the election of the dean and of the members of the Consejo Directivo de las Facultades, the voting delegates from the students to equal in numbers the number of the regular professors of the various faculties. These new conditions have led to an extraordinary electoral agitation. The students have made out lists of candidates whom they expect to elect. They are solidly backing all persons known to be opposed to the present university authorities, and those who for any reason they think have been victims of injustice. Sensible persons are hoping that this reform will not last long.

LONDON LETTER

LONDON, Nov. 19, 1918.

The Influenza Epidemic

Though fresh cases of influenza continue to occur, the epidemic has spent its force and the number of patients under treatment has greatly diminished. The complication of pneumonia is less often fatal than it was at first. The Royal College of Physicians has drawn up a memorandum for the information of the public. It is pointed out that the present epidemic is virtually world-wide, irrespective of race, community or calling. Similar world-wide epidemics occurred in 1803, 1833, 1837, 1847 and 1890. The long intermission since the last widespread epidemic had made an early reappearance probable, but the conditions of epidemic prevalence of influenza are too obscure to allow of precise prediction. This outbreak is essentially identical, both in itself and in its complications, including pneumonia, with that of 1890. The disproportionate occurrence of a special symptom, a well-recognized phenomenon in the case of epidemics, for example, nosebleed in the present epidemic, does not invalidate this statement. The nature of the virus is still uncertain. It is possibly beyond the present range of microscopic vision. The bacillus discovered by Pfeiffer has in the past been

regarded as the probable cause, though on insufficient evidence. There is no doubt as to the primary part it plays in the disease, important though it probably is as a secondary infecting agent. Pfeiffer's bacillus, the pneumococcus, and, above all, in this epidemic the streptococcus, seem to be responsible for most of the fatal complications of influenza. Infection is conveyed from the sick to the healthy by the secretions of the respiratory surfaces. In coughing, sneezing, and even in loud talking, these are transmitted through the air for considerable distances in the form of a fine spray. The channels of reception are normally the nose and throat; hence the importance of avoiding thronging of every sort. The period of incubation is about forty-eight hours, or even somewhat less. Good nourishing food, and enough of it, is desirable. War rations are fully adequate to the maintenance of good health, though they may not afford just the particular articles that each fancy demands. Alcoholic excess invites disaster; within the limits of moderation each person will be wise to maintain unaltered whatever habit experience has proved to be most agreeable to his own health. As the primary cause of influenza is unknown, no form of inoculation can be guaranteed to protect against the disease. Moreover, the lack of enduring protection after an attack shows that a vaccine could not protect for more than a short period. No drug has as yet been proved to have any specific influence as a protective.

Medical Demobilization

The Central Medical War Committee has recommended that medical officers who have served away from the area of their practices since the beginning of the war should be released before others serving temporarily with the forces. The Ministry of National Service has advised that this principle be adopted, and the Army Medical Department has agreed that officers who have served since the beginning of the war shall be released first from the army, while those who have qualified since the war began shall be withdrawn last.

Barbarities Committed by German Physicians

In the House of Commons, Sir George Cave, the home secretary, who recently went on a mission to Germany to arrange for the exchange of British for German prisoners, referred to the cruelties perpetrated on British prisoners in the camps and salt mines and those employed behind the lines to dig trenches and set up wire. He also said: "There are others, even in the hospitals, where, surely, humanity ought to reign. No doubt there are many humane physicians in Germany, but there are others who make a cruel distinction between British prisoners and other prisoners of war; and even among nurses many are found, who, far from helping suffering prisoners, have stooped to inflict insult and injury on them. The hospitals, as is shown by the condition of our men who are arriving in Holland and Switzerland, are in a very bad state, and our wounded do not get proper treatment." As previous letters to THE JOURNAL have shown, this conduct of the German medical profession is far from exceptional. In a letter to the *Times*, Mrs. Vincent Smith gives a harrowing account of the treatment of her aged father, Colonel Baddeley, British consul at Bruges, who after enduring all sorts of persecution in his house was taken to Germany. When he arrived at Aix-la-Chapelle his condition so aroused the pity of the Red Cross women that one brought him some soup, but a physician nearly knocked the cup out of her hand and asked her what she meant by having pity on an Englishman, and ordered the sentries to take him away. The same physician later came on the station platform and collected a crowd and cursed the old gentleman and his daughter in English. When they arrived at the camp at Giessen there was one physician who was " a good sort," but another, a professor, a perfect brute. He told the Red Cross men they were never to speak to Mrs. Smith or to do anything for her or to give her medicine.

Penalty for Soldiers Refusing to Submit to Treatment

In the naval and military war pensions bill, which is now passing through the House of Commons, there is the following clause: If any disabled officer or man, on being so required in the prescribed manner, refuses or without reasonable cause fails to submit himself for medical examination, or if any disabled officer or man, as respects whom it has been certified that treatment in an institution or otherwise is necessary in his interest, refuses or without reasonable excuse fails to undergo such treatment in accordance with such directions as may be given in that behalf by or with the approval of the minister, the minister may, if he thinks fit, order that any pension or allowance to which that officer or man would otherwise be entitled shall cease to be payable either in whole or in part for such period as may be specified in the order. Mr. Hodge, minister of pensions, said that there was power to punish a man to the extent of withholding half his pension if he refused treatment; but if a man's pension was taken away, the punishment, if he was a married man, fell on his wife and child. He hoped that the power asked for under the bill would of itself be sufficient to induce men to accept treatment.

Rations for Tuberculous Persons

A new dietary scale for the tuberculous has been issued by the government. The following are the maximal weekly amounts for each male over 10 years of age residing in a sanatorium or special ward set apart for the treatment of tuberculosis: meat (including suet) 56 ounces; fish and poultry, 16 ounces; bacon, 8 ounces; bread, 64 ounces; flour, 8 ounces; sugar, 8 ounces; butter and margarin, 10 ounces; lard and edible fats, 3 ounces; potatoes, 80 ounces; vegetables (fresh), 28 ounces; milk, 14 pints; jam, syrup, etc., 8 ounces; cereals, 12 ounces; oatmeal, 8 ounces; peas, beans and lentils, 8 ounces; tea, 2 ounces, and cheese, 4 ounces. Since patients suffering from marked constitutional disturbance may be unable to take peas, beans and lentils or the full amounts of potatoes and bread specified, an adult male patient certified by the medical officer of the institution to be so suffering and to require additional milk shall be entitled to not more than 7 pints of milk weekly (or the equivalent in dried milk prepared from whole or separated milk) in addition to the amount specified. Females over 10 years of age and children under 10 are entitled to four fifths and three-fifths, respectively, of the amounts laid down for males over 10, except that in every case the patient will be entitled to 8 ounces of sugar and 3 ounces of edible fats weekly.

Prostituted Science

In his presidential address to the Faraday Society, Sir Robert Hadfield said that the war had been largely one of the metallurgist, the engineer and the chemist. To the enemy scientists had been left the ignoble rôle of prostituting knowledge to the basest of uses. No matter how clever had been their inhuman ideas with regard to poison gas, petrol flame throwers, etc., the enemy's men of science in time to come would look back and find everything to be ashamed of and nothing of which they could be proud. On the other hand, the scientific men of all the Allies had not only clean hands but also clean minds. While it had been necessary for us in self defense to meet and counterattack the many horrible devices of the enemy, there was not a man in the whole of the British Empire who would have introduced one of these terrible devices. Huns of all classes were equally to blame for this war. Of what use, therefore, was it to talk about a league of nations at this hour of the day? It would be a league of fools if it included Germany after her unparalleled atrocities, inhumanity and bestiality. To admit the Hun to any council of nations would be like inviting a burglar or a murderer to join a Y. M. C. A. council.

PARIS LETTER

PARIS, Nov. 14, 1918.

Prophylaxis and Treatment of Complications of Influenza

At a recent meeting of the Académie de médecine, Dr. Louis Weiller recommended the use of dilute solutions of beechwood creosote in the prophylaxis and treatment of the pulmonary complications of influenza. Every twelve hours the patient is given in an enema a glass of lukewarm milk containing about 1 drop of creosote for each year of age for children, and 25 to 30 drops for adults. The mixture should be well shaken and the enema retained for at least two hours. In cases of pulmonary complication, the dose should be increased by 2 to 5 drops for children and 4 to 8 drops for adults. The complication subsides rapidly. The intervals should be lengthened when the temperature becomes normal, and two days after the cessation of the pyrexia, the treatment is stopped. Albuminuria, so frequent a symptom in pneumococcic infections, is not a contraindication for this treatment. As adjuvant medication, acetate of ammonia may be given by mouth, and antisepsis of the nasopharynx should not be overlooked.

The Influenza Epidemic

The epidemic of influenza is on the wane in Paris. For the week ending November 2, 1,119 deaths from influenza were registered as against 1,263 for the preceding week. Adding to these figures the deaths caused by acute diseases of the respiratory apparatus, the result is 1,539 deaths as

against 1,778 for the preceding week. M. Mesureur, directeur de l'Assistance publique, reports that the hospital admissions have fallen off about 50 per cent., and the wards are no longer crowded with patients.

Dr. Louis Mourier, undersecretary of state for the Service de Santé militaire, reported to the Commission d'hygiène that in the army the epidemic is subsiding, and that most of the cases of today do not present the gravity met with formerly.

Letter from General Petain to the American Red Cross

General Petain, commander in chief of the Armies of the North and Northeast, addressed a letter to Colonel Gibson, commissioner for France of the American Red Cross, in which he acknowledged receipt of the notice that the American Red Cross had voted a new credit of 10 millions for the relief of French soldiers and officers, and extended his personal thanks and the thanks of the armies under his command for this kindness. He made acknowledgment of the valuable moral and material aid rendered by the American Red Cross, and did not fail to extend his appreciation to the people of the United States as a whole.

Interallied Social Hygiene Congress

The Comité national de l'éducation physique et de l'hygiène sociale, presided over by M. Henry Paté, has decided to organize, with the assistance and under the patronage of the government, an interallied congress of social hygiene, whose object will be the reconstruction of the devastated regions. This congress will be held in Paris early in 1919, and will have an interallied social hygiene exposition.

Office of Food Controller

The under-secretary of state of provisioning has established a food controller's office for the purpose of facilitating the work of the authorities in regulating prices, and in securing and distributing food to the civil population, calling to its assistance experts on syndical organizations, sales and production.

Making Tuberculosis a Reportable Disease

The matter of making tuberculosis a reportable disease having again been made a subject for discussion by the public authorities, the Conseil d'administration du Syndicat des médecins de la Seine, has issued the following statement: "The Conseil d'administration believes that it is absurd to make tuberculosis a reportable disease before ample proper means for treating these patients have been provided (dispensaries, sanatoriums, special hospitals, farm colonies, etc.). The compulsory declaration of the disease, to which the Syndicats médicaux have on numerous occasions made objection, is not even justified by the usefulness of the disinfection, made by order of the law, of the home of the patient. Such disinfection is of value only when made at the time the patient leaves the domicile. Applied under any other conditions, the tuberculous patient becomes an object to be dreaded, an outcast, and this disinfection, moreover is inefficacious. The only effectual disinfection is that done by the patient or those around him, repeated every day; all these persons must be instructed in hygiene in this line. Tomorrow as well as today, the attending physician will apply only the measures taken in the interest of the patient and his family, and he will not have any respect for administrative decisions or ordinances which may conflict with one or the other."

American Red Cross Hospitals in Vicinity of Paris

Military Hospital No. 7 of the American Red Cross has been opened at Malabry near Plessis-Robinson, about ten kilometers from Paris. The hospital is placed in a park by permission of the département de la Seine, valid for the duration of the war. The hospital opened with about 600 beds. The American Red Cross now maintains in and around Paris seven hospitals: the former American Ambulance at Neuilly; the hospital of Dr. J. A. Blake; the hospital of the Whitelaw Reids; the military hospital of Joinville-le-Pont; the Auteuil hospital; the Neuilly hospital for diseases of the skin, and the new Malabry hospital.

Donation to Academy of Medicine

Dr. Dragovitch has donated to the Académie de médecine bonds of the value of 2,000 francs, bearing 5 per cent. interest, for the purpose of founding two prizes, one for the best work on the etiology and treatment of mental diseases, and the other on the etiology and treatment of diseases of metabolism.

Deaths

Major Joseph Biddleman Bissell ✠ **M. C., U. S. Army,** New York City, College of Physicians and Surgeons in the City of New York, 1883; aged 59; chief surgeon of U. S. General Hospital No. 2, Fort McHenry, Md.; clinical professor of surgery in University of Bellevue Hospital Medical College; a member of the American Urological Association; for nearly twenty years a member of the surgical staff of Bellevue and St. Vincent's hospitals; consulting surgeon to the Hospital for Deformities and Joint Diseases, and to the German Hospital and Dispensary; surgical director of the Radium Institute of New York, and president of the American Radium Society; died in Mount Sinai Hospital, New York City, December 1, from septicemia.

Lieut. Thomas Jefferson Palmer ✠ **M. C., U. S. Army,** McAlester, Okla.; University of Illinois, Chicago, 1905; aged 39; a veteran of the war with Spain; who, after a course of training at the Medical Officers' Training Camp, Fort Riley, Kan., was assigned to duty with Field Hospital No. 27, Sixth Division; and sailed for France, June 28; while on duty, September 10, at a French Hospital on the Western Front, was gassed, and died October 28, at Base Hospital No. 14, Bordeaux, France.

John Down Heritage, Glassboro, N. J.; University of Pennsylvania, Philadelphia, 1863; aged 81; assistant surgeon, Eleventh New Jersey Infantry during the Civil War; taken prisoner at the battle at Ream's Station, and afterward confined in Libby Prison, Richmond; in 1873 elected grand chancellor of the Knights of Pythias of New Jersey; died at his home, November 20.

Watson Lovell Wasson ✠ Waterbury, Vt.; University of Vermont, Burlington, 1901; aged 44; professor of mental diseases in his alma mater; a specialist in psychiatry; superintendent of the Vermont State Hospital for the Insane, Waterbury; died in that institution, November 24, from pneumonia.

James Smith Ford, Loomis, N. Y.; College of Physicians and Surgeons in the City of New York, 1910; aged 32; a member of the Medical Society of the State of New York; senior assistant physician of the Loomis Sanatorium; died in that institution, November 21, from pneumonia following influenza.

Asst. Surg. Bertram L. Cunningham ✠ **Lieut. (j. g.), U. S. N. R. F.,** Jamaica, N. Y.; New York Homeopathic Medical College, 1913; aged 30; on duty at the Medical Office, Third Naval District Headquarters, New York City; died in New York City, October 21, from bronchopneumonia following influenza.

Lieut. Samuel Dennison Shannon ✠ **M. C., U. S. Army,** Baltimore; University of Maryland, Baltimore, 1915; aged 26; who entered the Medical Corps in May, 1917, and was later transferred to the British Medical Service, died in the Red Cross Hospital, London, November 5, from influenza.

Capt. James McFarland ✠ **M. C., U. S. Army,** Burlington, N. J.; University of Pennsylvania, Philadelphia, 1911; aged 31; who entered the service in April, 1917, and after a tour of duty at Camp McClellan, Ala., went to France in June, 1918; died, October 24, from wounds received in action.

Eldora Alice Thomas, Chicago; University of Illinois, Chicago, 1913; aged 33; for several years a medical missionary in Sierra Leone, West Africa; more recently house physician at the University Hospital, Chicago; died in that institution, November 26, from valvular heart disease.

Roy Herman Renn, Williamsport, Pa.; Jefferson Medical College, 1906; aged 40; a member of the Medical Society of the State of Pennsylvania; while hurrying to the train after making a professional call at Nisbet, Pa., November 28, died suddenly from heart disease.

Joseph Felix Corrigan, St. Leo, Fla.; College of Physicians and Surgeons in the City of New York, 1871; aged 72; one of the founders of the New York Foundling Asylum, and for many years house physician at Bellevue Hospital; died at his home, November 28.

Amelia M. Augur, Cooperstown, N. Y.; Northwestern University, Woman's Medical School, Chicago, 1880; aged 62; died in the City Hospital, Binghamton, October 31, as the result of injuries received when she was run down by a motor truck, in Endicott.

Col. Samuel M. Horton ✠ **M. C., U. S. Army** (retired), Albany, N. Y.; Jefferson Medical College, 1861; aged 80;

who entered the Army as assistant surgeon in 1861, and was retired June 6, 1894, on account of disability in line of duty; died in Albany, recently.

Lieut. Frederick George Carow ✠ **M. C., U. S. Army,** Brooklyn; Jefferson Medical College, 1917; aged 30; on duty with the One Hundred and Fifty-Second Depot Brigade, Camp Upton, N. Y.; died in the camp hospital, October 16, from pneumonia.

Edward Everett Peck, Caldwell, N. J.; Bellevue Hospital Medical College, 1879; aged 64; a member of the Medical Society of the State of New Jersey; mayor of Caldwell; was found dead in his garage, November 22, from cerebral hemorrhage.

Lieut. LeCount Rochambeau Lovellette ✠ **M. C., U. S. Army,** Chicago; University of Illinois, Chicago, 1917; aged 25; on duty in the base hospital at Fort Sam Houston, San Antonio, Texas; died at his post, December 2, from lobar pneumonia.

John Gustavus Winkelman, Brooklyn; New York University, New York City, 1879; aged 62; formerly a member of the staff of Kings County and St. Catherine's Hospitals; died at his home, November 24, from heart disease.

Omar Clinton Henry, Minerva, Ky.; Hospital College of Medicine, Louisville, Ky., 1905; aged 37; a member of the Kentucky State Medical Association; died at his home, October 13, from pneumonia following influenza.

Lieut. Albert Fabian Welin ✠ **M. C., U. S. Army,** Rio Vista, Calif.; Leland Stanford Jr. University, Palo Alto, and San Francisco, 1915; aged 28; died at Camp Kearney, Calif., October 31, from pneumonia following influenza.

Ralph Almeron Parker, Greene, Me.; Bowdoin Medical School, Brunswick and Portland, Me., 1904; aged 57; at one time a member of the Maine Medical Association; died at his home, October 13, from heart disease.

John Patrick Rowan, Brooklyn; Long Island College Hospital, Brooklyn, 1898; aged 41; a member of the staff of the Brooklyn, St. Peter's, Holy Family, St. Mary's and St. Catherine's hospitals; died, November 27.

Sarah C. Lowry, Portsmouth, Ohio; Laura Memorial Woman's Medical College, Cincinnati, 1896; aged 45; died at her home, Kitt's Hill, Scioto County, Ohio, November 20, from pneumonia following influenza.

Leora Franklin Hicks ✠ Amo, Ind.; Medical College of Indiana, Indianapolis, 1901; aged 44; on duty at the base hospital, Nitro, W. Va.; died in that institution, October 27, from pneumonia following influenza.

Charles Thomas Amason, Doles, Ga.; Louisville (Ky.) Medical College, 1893; aged 59; at one time a member of the Medical Association of Georgia; died at his home, November 12.

Newton Elliott Smith, Fayette, Mo.; Washington University, St. Louis, 1903; aged 38; a member of the Missouri State Medical Association; died at his home, October 12, from pneumonia following influenza.

Charles T. Thomas, Lebanon Junction, Ky.; Medical College of Evansville, Ind., 1881; aged 65; a member of the Kentucky State Medical Association; died at his home, October 19, from bronchopneumonia.

Daniel A. Holliday, Fairmont, Ind.; Kentucky School of Medicine, Louisville, 1893; aged 59; formerly a member of the Indiana State Medical Association; died at his home, November 24, from heart disease.

Lieut. Thomas Reed Ferguson ✠ **M. C., U. S. Army,** Kirkwood, Pa.; Jefferson Medical College, 1906; aged 33; died in the Lancaster, Pa., General Hospital, October 2, from pneumonia following influenza.

Sylvester E. Goss, Wyaconda, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1888; aged 56; a member of the Missouri State Medical Association; died at his home, October 4, from heart disease.

Otto C. McDannell, Lowell, Mich.; College of Physicians and Surgeons, Keokuk, Iowa, 1867; aged 74; a member of the Michigan State Medical Society; died at his home, November 20, from influenza.

Austin LaMonte, Carmel, N. Y.; University of Michigan, Ann Arbor, 1861; aged 81; a member of the Medical Society of the State of New York; died at his home, November 9, from arteriosclerosis.

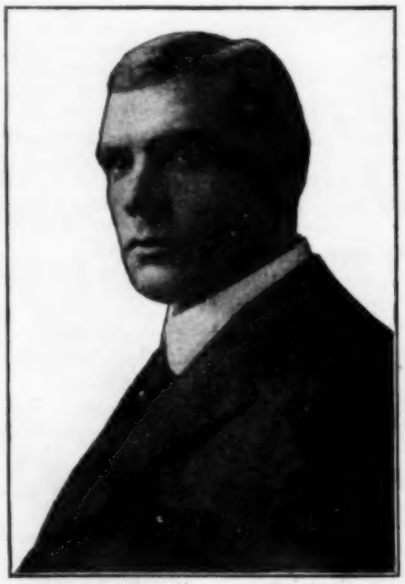
William Lundy Brown, Los Angeles; Bennett Medical College, Chicago, 1875; aged 68; at one time a member of the Medical Society of the State of California; died at his home, November 21.

William C. Jamison, Fairmont, W. Va.; Baltimore University, 1888; aged 67; at one time a member of the West Virginia State Medical Association; died at Weston, W. Va., November 23.

Andrew Orr Hastings, Toronto, Ont.; University of Victoria College, Coburg, Ont.; 1886; L. A. H., Dublin, 1887; aged 63; died at his home, November 21, from a nervous breakdown.

James Farnsworth Rodgers ✠ Bowling Green, Ky.; Rush Medical College, 1886; aged 61; died in the Deaconess Hospital, Louisville, Ky., August 31, from carcinoma of the stomach.

Isaac P. Primrose, Nelsonville, Ohio; Starling Medical College, Columbus, 1865; aged 86; a member of the Ohio State Medical Association; died at his home, November 23.



Died in the Service
IN FRANCE
MAJOR SHADWORTH O. BEASLEY,
M. C., U. S. ARMY, 1876-1918
(*See The Journal, last week, p. 1930*)

Cheever S. Clark, Canton, Ohio; University of Maryland, Baltimore, 1887; aged 60; a member of the Ohio State Medical Association; died at his home, November 22, from arteriosclerosis.

Will L. Allen ✠ National City, Calif.; King Eclectic Medical College, Des Moines, Iowa, 1889; aged 59; died at his home, November 18, from chronic nephritis.

Andrew Mason Taylor, Caney, Kan. (license, Kansas, 1901); aged 84; a practitioner for sixty years; died at his home, November 25, from arteriosclerosis.

Alfred Dow Long ✠ San Diego, Calif.; Harvard Medical School, 1907; aged 42; died in the Elwyn Sanitarium, National City, Calif., November 17, from uremia.

Jonas Larson ✠ Cozad, Neb.; John A. Creighton Medical College, Omaha, 1915; aged 33; died at his home, November 10, from pneumonia following influenza.

Antonio Rubino, Paterson, N. J.; University of Naples, Italy, 1893; aged 51; died in the Barnert Memorial Hospital, Paterson, November 22, from influenza.

William L. L. Foster, Waco, Neb.; Barnes Medical College, St. Louis, 1898; aged 45; died at his home, November 22, from pneumonia following influenza.

DeWitt Clinton Laverty ✠ Middletown, Pa.; Jefferson Medical College, 1877; aged 60; died in the Harrisburg Hospital, November 14, from appendicitis.

Charles G. Dawley ✠ Los Angeles; University of Southern California, Los Angeles, 1903; aged 39; died at his home, October 9, from bronchopneumonia.

Aaron A. Nefe, Lookout Mountain, Tenn.; Cincinnati College of Medicine and Surgery, 1869; aged 65; died at his home, November 8, from influenza.

Capt. Pleas Daniel Barnhill ✠ **M. C., U. S. Army,** Brenham, Texas; University of Texas, Galveston, 1876; aged 52; died October 31, from arteriosclerosis.

Hyman R. Wiener ✠ Harrisburg, Pa.; University of Maryland, Baltimore, 1912; aged 29; died in the Harrisburg Hospital, October 14, from influenza.

Walter Charles Paine, New Holland, Ill.; Rush Medical College, 1895; aged 52; died at his home, October 13, from pneumonia following influenza.

Linnaeus Jones Hunter, New York City; New York University, New York City, 1889; aged 56; died at his home November 27, from pneumonia.

Lanea Cornelius, Quapaw, Okla.; Hahnemann Medical College, Kansas City, Mo., 1910; aged 33; died at his home, November 7, from pneumonia.

John Meikle Caldwell, Springerville, Ariz.; Detroit College of Medicine and Surgery, 1916; aged 26; died in October at Springerville, from influenza.

Robert Alexander McClelland ✪ Yorkville, Ill.; Rush Medical College, 1878; aged 64; died at his home, November 29, from cerebral hemorrhage.

John Robert Mason, Lancaster, Tenn.; University of Nashville, Tenn., 1905; aged 36; died in Baltimore, November 20, after a surgical operation.

George W. McDowell, Rockford, Ill.; Hahnemann Medical College, Chicago, 1889; aged 52; died at his home, November 22, from myocarditis.

Henry William Rose, Brooklyn; New York Homeopathic Medical College, New York City, 1876; aged 69; died at his home, November 29.

Hammel House Wright, Little Rock, Ark.; (license, Mississippi, 1910); aged 33; died in Little Rock, October 11, from pneumonia.

B. J. Hardeman, Martin, Tenn. (license, Tennessee, 1889); died at the home of his daughter in Martin, November 18, from influenza.

Stephen L. C. Bredin, East Orange, N. J.; University of Pennsylvania, Philadelphia, 1855; aged 83; died at his home, November 18.

George Lang, Valdosta, Ga.; Savannah, Ga., Medical College, 1861; aged 79; a Confederate veteran; died at his home, November 15.

Maurice C. Jacobs, Kansas City, Mo.; Eclectic Medical Institute, Cincinnati, 1866; aged 80; died at his home, November 16.

Kenneth M. Stell, Cunningham, Texas; Chicago College of Medicine and Surgery, 1911; aged 37; died at his home, October 22.

William Francis Lewis, Anoka, Neb.; Rush Medical College, 1884; aged 57; died at his home, November 22, from pneumonia.

John Henry Blomenkamp, Barada, Neb.; Rush Medical College, 1911; aged 32; died at his home, November 26, from influenza.

Fortunatus James Sconzo, Brooklyn; Long Island College Hospital, Brooklyn, 1917; aged 26; died at his home, October 9.

Mary V. Cosford, Spokane, Wash.; Eclectic Medical Institute, Cincinnati, 1885; aged 62; died at her home, October 28.

Charles Stirling, Oakland, Calif; University of Illinois, Chicago, 1888; aged 63; died at his home, November 28.

W. T. Reagan, McNeil, Ark. (license, Arkansas, 1905); aged 36; died at his home, November 27, from influenza.

Cyrus W. Babcock, Buffalo, N. Y. (license, New York, 1866); aged 81; died at his home, November 7.

James Roy Mains ✪ Powell, Wyo. (license, Wyoming, 1904); aged 41; died at his home, October 23.

Marriages

CAPT. JOHN HAROLD CARROLL, M. C., U. S. Army, New York City, on duty with the American Experitionary Forces in England, to Miss Jean MacGregor, C. A. M. C., on duty with Fifteenth Canadian General Hospital, Taplow, England, in London, September 12.

ASST. SURG. FRANKLIN MYERS GOODCHILD, Lieutenant (junior grade), U. S. Navy, New York City, assigned to duty at the U. S. Naval Hospital, Brooklyn, to Miss Frederika Riesberg of Park-Hill-on-Hudson, N. Y., in New York City, November 16.

LIEUT. LEE WALLINGFORD DARRAH, R. A. M. C., Brookville, Pa., on duty with the British Experitionary Forces in France, to Miss Margaret Moysey of Knightsbridge, London, England, November 7.

GEORGE W. HARPEL, Rochester, N. Y., to Miss Grace Tower Tier of Philadelphia, at Llanerch, Pa., November 19.

HOMER BURLINGTON SHOUP to Miss Cora Harper, both of Sharpsville, Ind., at Logansport, Ind., November 23.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

EMETIN BISMUTH IODID ACCEPTED FOR N. N. R.

Report of the Council on Pharmacy and Chemistry

The Council has voted to accept emetin bismuth iodid for New and Nonofficial Remedies and to include Emetin Bismuth Iodid-Abbott and Bismuth Emetin Iodid-Mulford as accepted brands. It has authorized publication of the following report on emetin bismuth iodid.

W. A. PUCKNER, Secretary.

Historical: Emetin bismuthous iodid was introduced by A. G. DuMez in 1910. It varies considerably in composition according to its preparation. The sample analyzed by DuMez contained about 29 per cent. of emetin. The compound is insoluble in water and dilute acids, but is decomposed by alkalis. On the basis of these solubility characters, DuMez in 1910 suggested that it should pass the stomach unchanged, and thus have a lesser tendency to produce vomiting and diarrhea; but that it would presumably be decomposed and absorbed in the alkaline intestines.

DuMez did not have any clinical trials made, and his suggestion was neglected, until it was revived by Dale in 1916. Dale took up the subject because of the unsatisfactory results from the hypodermic emetin treatment in chronic cases, and carriers, of amebic dysentery. He assumed that the intestinal ameba at least might be reached more directly by oral administration than by the circulation. He therefore prompted the clinical trial of the DuMez compound, with promising results.

Administration: Dale employed a dosage of 3 grains of emetin bismuth iodid (corresponding to about 1 grain of emetin) daily, for 12 days. This dosage has been followed by subsequent observers. Dale gave the daily quotum at a single dose, during or after a full meal. Some of the others have given it in divided doses, and at different times. Apparently the midday meal is best, since the after-effects then cause the least inconvenience.

Dale also suggested a keratin-coated pill. As the coating of pills with keratin is now generally recognized to be of little value as a means of preventing the disintegration of pills by the gastric juice (Reports Coun. Pharm. & Chem., 1911, p. 58) salol-coated pills or capsules should be tried and also the wax mass proposed by N. S. Davis (THE JOURNAL, Oct. 14, 1916, p. 1160) and the procedure of Ballenger and Elder (THE JOURNAL, Jan. 17, 1914, p. 197).

Efficiency: All the clinical observers report satisfactory results. The disappearance of amebas from the stools is generally complete and apparently permanent even in chronic cases and carriers, and in patients in whose cases the hypodermic injections had failed. The compilation of Waddell and co-workers (1917) is most comprehensive. It shows about 18 per cent. of failures in carriers. This may be considered an excellent showing. The method in acute cases also is at least equal to the hypodermic administration of emetin hydrochlorid.

Side-Actions: The statements in regard to these vary somewhat, as might be expected. It is clear, however, that the preparation is far from nonirritant and produces much more gastro-intestinal disturbance than does the hypodermic method. Waddell *et al.* report that practically all patients respond either by purging or vomiting or both; the two phenomena being generally of inverse severity.

Low and Dobell state that "some of these [symptoms] recall to one's memory the old ipecacuanha days," although the symptoms are generally not quite so severe. Unfortunately there are no published records of parallel observations on the severity of these symptoms, comparing the plain ipecac treatment, by Simon's method for instance, with the

emetin-bismuth compound and with the adsorption preparation ("Alkresta Ipecac").

Waddell *et al.* state that the vomiting starts in about one hour, the diarrhea in three hours. They can be checked only by opiates. Practically no tolerance is acquired. The vomitus generally has the red color of the drug, showing that the keratin coating had dissolved in the stomach. Evidently this confers but little protection. The severity of the nausea and vomiting varies considerably for different patients. This variation is not to be accounted for by variations in the drug, for this was of the same origin in most of the series. Presumably the variable reaction of the stomach may be an important factor in gastric solution and local irritation by the drug. However, it must be remembered that the emesis is largely of central origin (Eggleston and Hatcher, 1915), and therefore could not be avoided by any method that would permit the absorption of the emetin.

Evidently, the side-effects of the drug are still very undesirable, although they do not preclude its use and are less disagreeable than with the old methods of oral administration. In view of the distinct field of usefulness for the oral method from the standpoint of efficiency and convenience, the emetin bismuth iodid preparations have been accepted for New and Nonofficial Remedies.[1] It is desirable that further methods of insuring gastric insolubility be sought. It is also worth while to determine if smaller daily doses may not perhaps be efficient.

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Correspondence

GENITAL GONORRHEA IN EARLY CHILDHOOD

To the Editor:—The article by Dr. Haines on "Acquired Genital Syphilis in the Infant" (The Journal, Feb. 9, 1918, p. 370) prompts me to report five cases of gonorrhea in early childhood that came to my notice at my former dispensary clinic in Chiengmai, Siam. I believe that this is a fairly rare condition anywhere. All five cases were in girls ranging from 2 to 7 years of age.

A Chino-Lao girl, aged 2 years, complained of painful micturition. I suspected urinary calculus of the bladder, as this is very common; but examination showed the whole vulva smeared with a thin, creamy pus, a microscopic examination of which disclosed the gonococci in large numbers. I then questioned the father, who with practically no hesitation said that he had gonorrhea and that he had expressed some of the pus from his penis onto his finger and then deliberately rubbed it into the vagina of his daughter. When asked why, he said that if he could only give his infection to a virgin he would be cured at once of his gonorrhea. I understand that such a superstition is common among the negroes of America and may be an explanation as to the source of infection in Dr. Haines' case.

Three little sisters, ranging in age from 4 to 7 years, all seen within ten days of each other, children of a well-to-do Eurasian, presented the same symptom of a purulent discharge from the vagina, and all had gonococci by microscopic examination. The source of infection here was the nurse girl, who performed the act of masturbation with her little charges.

The 5-year-old daughter of a well-to-do Siamese had the same experience as the three sisters. The microscopic findings were positive. This was also a case of congenital syphilis.

In all five cases the treatment consisted in keeping the parts free from pus and applying a 2 per cent. silver nitrate solution once a day, with from 2½ to 5 grains of a hexamethylenamin solution by mouth three times a day. All the patients responded very quickly and were apparently cured in from ten days to a fortnight.

C. W. Mason, M.D., Chieng Rung, Yunnan, China.

INFLUENZA IN HORSE AND MULE

To the Editor:—Physicians are aware of a disease in horses and mules called "influenza." It is misnamed, because it is not due to the same cause as influenza of man. However, it may be of interest to know that this disease in horses and mules bears a wonderfully striking resemblance to influenza in man, both in the influenza itself and in its complications.

Influenza in the horse and mule is confined almost exclusively to so-called green horses, namely, those shipped to infected sales stables for the first time. One attack usually produces immunity, but not always. The disease is more or less common during the shipping season every year, but the complications vary greatly from year to year as to their frequency and the virulence of the secondary infection. Such a history is not unlike that of influenza of man.

The cause of influenza in the horse and mule has not been determined, although it is probably a filtrable virus. If the influenza remains uncomplicated, it is of little or no consequence and is referred to as a shipping fever or shipping cold; every few years, however, a general epizootic or local enzootics occur with secondary infections often resulting in the death of many animals. Pneumonia and other respiratory complications are most common, although in some instances intestinal and nervous complications may exist. A bipolar staining organism of the pasteurella group has often been found in the complications.

As a specific disease, the trouble has prevailed throughout this country for a great many years, and many people still recall the serious form it took in 1870-1872, under the general term "epizootic" and the more specific "pink eye." Again, in 1900-1901, a more or less serious outbreak occurred. During the past few years, the complications have varied from year to year. Six years ago this fall and coming winter, some horse dealers located at various sections of the country lost as much as 50 per cent. and more of their shipments. Last fall and winter, losses were frequently quoted from 5 to 25 per cent. of shipments. The Army has likewise been a very heavy loser at all of its concentration and remount depots.

The symptoms of influenza in the horse when uncomplicated are rising temperature to a greater or less degree with a similar increase in the pulse rate and respiration, and loss of appetite to a certain extent, with some indisposition and depression. The mucous membrane of the eye shows more or less watery secretion and yellowish red color (pink eye).

The necropsy findings in uncomplicated influenza are usually limited to a catarrhal condition of the mucous membranes of the respiratory tract and of the eye. When complicated, as previously stated, varying forms and degrees of pneumonia are common, accompanied by frequent pleurisy with effusion. In other cases, the complication is largely that of edema of the lungs, or the edema may be confined to the larynx or extend throughout the whole of the respiratory tract. Again, in some instances, the predominating complication is marked by a very acute inflammation of the intestine, which previously led to a profuse diarrhea. In still other cases, the most marked findings have been an inflammation of the meninges of the brain and spinal cord.

Prophylaxis against the influenza is to be largely effected by sanitary measures in keeping susceptible animals unexposed to the infection, and the disinfection of infected premises. Little has been accomplished in the production of a vaccine or serum preventing the influenza, but apparently good results have been secured in preventing the complications when using vaccines composed of the various organisms found in the different complications.

The treatment of influenza calls for very little other than good hygienic and sanitary measures during the course of

1. See New and Nonofficial Remedy Department of this issue.

the disease, but such measures are only of limited value in the influenza complications. Here again, apparently good results, however, have been attained when the animals are treated early with an immune serum produced by the organisms in the complication. Such serum to be effective, of course, must be administered early in the course of the trouble.

G. A ROBERTS, D.V.S., Raleigh, N. C.
Veterinarian, Department of Veterinary Medicine, North Carolina College of Agriculture and Mechanic Arts.

GERMANY'S GUILT FOR INTRODUCING WAR GASES

To the Editor:—In an editorial in THE JOURNAL, November 23, you refer to the suggestion that asphyxiating gases be used in warfare as having been rejected by the British government by reason of the inhumanity of the procedure. The actual facts are that at the first Hague convention in 1899, when twenty-six nations were represented, a proposal to prohibit the use of such gases was made and twenty-four nations agreed, the dissenting nations being Great Britain and the United States. In 1907, the matter was again brought up. This was the second general convention. Great Britain gave way and the United States stood alone in refusing to agree to the prohibition.

The chairman of the convention—a Dutch delegate—begged Admiral Mahan—the opponent of the resolution—to sign for the sake of humanity, but he declined. His reasons for this action are given in Hull's book, "The Two Hague Conferences." They are, in my opinion, unanswerable. For further details see James Brown Scott's work on the Hague conferences.

Inasmuch as a Hague rule provides that when belligerents are all signatories to any agreement they should observe this, but if any one takes in an ally that is not signatory the agreement lapses, it follows that the moment the United States entered the war, all agreements in regard to the non-use of asphyxiating gases would have been canceled.

HENRY LEFFMANN, M.D., Philadelphia.

[COMMENT.—Germany was the first nation to violate international agreement on the use of asphyxiating gases, employing these in a surprise attack in the battle of Ypres, April 23, 1915, long before the United States entered the war.—ED.]

REDUCTION OF RESPIRATION FOR INSOMNIA

To the Editor:—I start with the assumption that every insomnia patient has been carefully examined for any pathologic condition, especially for intestinal disorders, and that all medical and surgical conditions have been met.

The suggestions offered herein are for that class of patients that cannot forget their business when they want to sleep and should be asleep, or those who have troubles or worries from which they are unable to travel or take a vacation. My first efforts began about ten years ago, along the popular line of mental gymnastics, in an attempt to control the mental states. Since the dreaming state lies between consciousness and sound sleep, just at the threshold of sleep the idea was to make them dream themselves to sleep. Directions were to avoid reasoning and analysis, to direct any train of thoughts into the absurd and grotesque. Mention is made of this method because it has some value; about 20 per cent. of patients will admit benefit from it alone, and it can be practiced in conjunction with the second experiment. This second method deals with a more primitive physiologic function, which also has a typical threshold phase and is fortunately subject to control of the will, even by those whose minds are fairly racing with themselves.

I am sure that every surgeon, or anybody connected with an operating room, has noticed that patients put to sleep pass through a semiconscious stage in which respirations are slow and shallow; it is often hard to detect them at all until more is given. The same occurs with gas, which does not irritate the respiratory tract. Natural sleep is ushered in in the same manner; the shallow, slow, threshold phase can be studied in this case without the excitement stage. It is through this natural physiologic pathway that we should attempt to lead our subjects and imitate Nature's process.

The subject should be placed in the best possible environment, with good ventilation. He should be quiet and warm, and should be directed to find a comfortable position and stay in it. He should breathe slowly and shallowly, not too slowly at first until the body becomes accustomed or adjusted to being quiet and in the recumbent position. After allowing about ten minutes for this, he should breathe less and less. Different subjects apply the same principle differently; they learn little tricks that suit their own case. Probably the best method is for him to take a fair respiration and hold after exhalation as long as he can with comfort, then slowly take another, exhale and hold again. He should be directed to continue in this manner. The subject may at first feel that he cannot control or diminish his respirations, but a little patience and effort will in a short time (within two weeks) prove that he can.

I have tried this method of respiratory control in about twenty cases during the past year. Results have seemed so good and its applications so simple that I am anxious for others to try it out fairly and report their success.

G. J. MAUTZ, M.D., Fort Riley, Kan.
First Lieutenant, M. C., U. S. Army.

THE PROPHYLAXIS OF INFLUENZA

To the Editor:—At the end of the first week of the influenza epidemic at Newport (Sept. 15, 1918), while the disease was raging with great severity, 1,000 men were removed from the receiving barracks to the Vanderbilt farm (Camp Admiral Oman), 7 miles out of town. Here they were placed in large pyramidal tents, eight men to each tent.

During the first three days, ninety-three new cases of influenza developed among the men at the camp. September 19, the fourth day at the camp, no new cases developed and the epidemic practically terminated, only an occasional sporadic case of influenza developing thereafter.

The men at the camp mushroomed their tents every sunny day, ate at mess tables placed in the open, and were allowed no liberty during the first five weeks at the camp. It was noticed at the same time that the men in tents at the training station suffered equally with those in the barracks. The explanation of these two apparently diametric experiences lies in the fact that the men in tents at the training station ate in mess halls, where there is more or less group gathering.

The lesson to be learned from the medical experience at Camp Admiral Oman is that epidemic influenza can be checked to a great extent by plenty of fresh air and sun and by the preventing of group gathering and crowding, such as takes place in theaters, churches, etc., in civilian life and in barracks and mess halls in military life.

CHARLES H. CARROLL, M.D., Newport, R. I.
Lieutenant, Junior Grade, U. S. N. R. F.

ADVANTAGES OF A NATIONAL DEPARTMENT OF HEALTH

To the Editor:—I believe THE JOURNAL has always favored a national health department or some arrangement by which the national government would have more power to enforce regulations tending to the prevention of disease and handling health problems for the good of the public in general. Conservation of life is more essential than conservation of labor, food, etc. I believe that if you could in some way bring more prominently to the people's mind the fact that during the first year of the war, barring battle fatalities, the death rate in the Army and Navy from disease was only one third as great as that in civil life of men of the same age before the war began, the public would favor such a department. I believe that if the recent epidemic of influenza had been handled by the government in all parts of the United States as it was in the Army and Navy, we would have saved thousands of lives and millions in money to the government and

the people. What we would have saved the United States in this one epidemic would have taken care of a special health department for several years to come.

J. H. Wolfe, M.D., Los Angeles.

ORIGIN OF THE USE OF IODIN FOR SKIN STERILIZATION

To the Editor:—In regard to crediting achievements to foreign countries, I wish to record a memorandum:

Generally, perhaps, it is assumed that the use of tincture of iodin for skin disinfection originated with Grossich and was first recorded by him in the *Zentralblatt für Chirurgie*, Oct. 31, 1908, p. 1289. As a matter of fact, I began the use of tincture of iodin for the purpose of skin disinfection in the latter part of the year 1905, in my surgical service, and called attention to it in an article entitled "Some of the Uses of Iodin in Surgical Practice" (The Journal, April 14, 1906, p. 1102). Again, I published an article calling attention to the same method in *American Medicine*, November, 1906.

I reviewed the history of the iodin method of skin sterilization in a paper read before the American Association of Obstetricians and Gynecologists at Louisville, Ky., in September, 1911, and published in the *American Journal of Obstetrics*, 1912, **65**, 6.

J. E. Cannaday, M.D., Charleston, W. Va.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

WEARING UNIFORM AFTER DISCHARGE

To the Editor:—Will you please publish whether or not medical officers can continue to wear their uniforms and insignia after discharge? I would suggest that the Medical Reserve Corps should be open for enlistment to any ex-medical officer who desires to enter, with the privilege of wearing the full regalia with, perhaps, the exception of wearing the U. S. R. on the coat collar instead of the U. S. now worn.

F. M. O'Kelley, Sikesman, Mo.
Ex-Captain, M. C., U. S. Army.

Answer.—As noted in The Journal last week in the discussion concerning the demobilization of medical officers, a questionnaire has been or will be sent to medical officers on which they may indicate their desire to remain in the service. Those who are qualified may be admitted to the regular Medical Corps or to the Medical Section of the Officers' Reserve Corps. An earlier ruling of General March stated that all men honorably discharged from the service might continue to wear their uniforms for a period of three months. A later ruling states:

> The provision of section 125, national defense act, approved June 3, 1916 (Bull. No. 16, W. D., 1916), which permits any person who has been honorably discharged from the United States Army, Navy, or Marine Corps, Regular or Volunteers, to wear his uniform from the place of discharge to his home, within three months after date of such discharge, is held to apply to reserve officers when transferred from the active to the inactive list. Reserve officers, therefore, will be permitted to wear their uniforms from the place of last duty to their homes within three months of the date on which they were transferred to the inactive list.

THE USE OF LIPOVACCINES AGAINST PNEUMONIA

To the Editor:—I read in The Journal, Nov. 23, 1918, p. 1734, an item relative to vaccination against pneumonia. Where may the lipovaccine against the pneumococcus be procured?

D. W. Relihan, M.D., Smith Center, Kan.

Answer.—The lipovaccines described are manufactured by the Army Medical Laboratory. So far as we know, they are not yet available commercially, but are now in the experimental stage. The following articles on the subject of lipovaccine have appeared in The Journal:

> Whitmore, E. R.; Fennel, E. A., and Petersen, W. F.: Experimental Investigation of Lipovaccines, Feb. 16, 1918, p. 427.
> Whitmore, E. R., and Fennel, E. A.: Experimental Investigation of Lipovaccines, March 30, 1918, p. 902.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Alabama: Montgomery, Jan. 14. Chairman, Dr. S. W. Welch, Montgomery.

Arizona: Phoenix, Jan. 7. Sec., Dr. Allen H. Williams, 219 Goodrich Bldg., Phoenix.

Colorado: Denver, Jan. 7. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

District of Columbia: Washington, Jan. 14-16. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

Florida (E): Jacksonville, Dec. 16-17. Sec., Dr. G. A. Munch, 1806 Franklin St., Tampa.

Hawaii: Honolulu, Jan. 6. Sec., Dr. J. R. Judd, Honolulu.

Minnesota: Minneapolis, Jan. 7-10. Sec., Dr. Thomas McDavitt, 741 Lowry Bldg., St. Paul.

New Mexico: Sante Fe, Jan. 13. Sec., Dr. W. E. Kaser, East Las Vegas.

New York: Jan. 28-31. Albany, Buffalo, New York City and Syracuse. Mr. Herbert J. Hamilton, Asst. Prof. Exams., New York Dept. of Education, Albany.

North Dakota: Jan. 7. Sec., Dr. G. M. Williamson, 860 Belmont Ave., Grand Forks.

Oklahoma: Oklahoma City, Jan. 7-8. Sec., Dr. J. J. Williams, Weatherford.

Oregon: Portland, Jan. 7. Sec., Dr. H. S. Nichols, Corbett Bldg., Portland.

Pennsylvania: Philadelphia, Jan. 7-9. Sec., Mr. Nathan C. Schaeffer, State Capitol, Harrisburg.

Rhode Island: Providence, Jan. 2-3. Sec., Dr. B. U. Richards, State House, Providence.

South Dakota: Pierre, Jan. 14. Sec., Dr. P. B. Jenkins, Waubay.

Utah: Salt Lake City, Jan. 6. Corres. Sec., Dr. G. F. Harding, 405 Templeton Bldg., Salt Lake City.

Washington: Spokane, Jan. 7-9. Sec., Dr. C. N. Suttner, 415 Old Nat'l Bk. Bldg., Spokane.

Wisconsin: Madison, Jan. 14. Sec., Dr. J. M. Dodd, 220 E. 2d St., Ashland.

North Carolina June Examination

Dr. H. A. Royster, secretary of the Board of Medical Examiners of North Carolina, reports the oral, practical and written examination held at Raleigh, June 24-28, 1918. The examination covered 15 subjects and included 72 questions. An average of 80 per cent. was required to pass. Of the 52 candidates examined, 49 passed and 3 failed. Eighteen candidates were licensed through reciprocity. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Howard University (1917) 83.8; (1918) 80, 84.4, 84.7.		
College of Physicians and Surgeons, Keokuk	(1877)	80
Tulane University	(1910)	88.8
Johns Hopkins University	(1918)	89.4
University of Maryland (1918) 80.1, 85.7, 89.7.		
Boston University	(1917) 83.8; (1918)	84
Harvard University	(1918)	87.7
Columbia University	(1918)	89.8
North Carolina Medical College	(1909)	85.4
Jefferson Medical College (1918) 83, 84.1, 85, 85.1, 85.8, 85.8, 86.4, 86.5, 87.6, 88, 89.4, 89.7, 93.6, 94.		
University of Pennsylvania (1918) 81.3, 85.7, 85.8, 86.8, 87.7, 87.8, 88, 88.7, 88.8, 90.5, 91.6, 92.3.		
Woman's Medical College of Pennsylvania	(1918)	90.1
Chattanooga Medical College	(1903)	80
Meharry Medical College	(1917)	80, 80
Tennessee Medical College	(1902)	80
Medical College of Virginia (1901) 80; (1917) 80.4; (1918)		87.6
FAILED		
Leonard Medical School	(1912)	71.4
North Carolina Medical College	(1918)	72.1
Medical College of Virginia	(1918)	76.7

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Atlanta School of Medicine	(1913)	Georgia
Northwestern Woman's Med. School	(1893)	Indiana
Rush Medical College	(1902)	Illinois
Baltimore Medical College	(1912)	Virginia
College of Physicians and Surgeons, Baltimore	(1886)	Mississippi
Maryland Medical College	(1908)	W. Virginia
University of Maryland	(1905)	Maryland
University of Michigan Medical School	(1916)	Michigan
Washington University	(1902)	Missouri
University of the City of New York	(1890)	New York
Medical College of Ohio	(1896)	Ohio
Medical College of the State of S. Carolina	(1913)	S. Carolina
Memphis Hospital Medical College	(1913)	New York
University of Tennessee	(1893)	Tennessee
Medical College of Virginia	(1899) (1917)	Virginia
University College of Medicine	(1910)	Virginia
University of Virginia	(1889)	Virginia

Massachusetts September Examination

Dr. W. P. Bowers, secretary of the Massachusetts Board of Registration in Medicine, reports the oral, practical and written examination held at Boston, Sept. 10-12, 1918. The examination covered 13 subjects and included 70 questions. An average of 75 per cent. was required to pass. Of the 29 candidates examined, 20, including 9 osteopaths, passed, and 9, including 6 osteopaths, failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Chicago Hospital College of Medicine		(1918)	75
Boston University		(1918)	79, 81.8
Harvard University	(1917) 79.3; (1918) 77.1, 77.3, 83.		
Tufts College Medical School		(1917) 75; (1918)	75.7, 77.7
Long Island College Hospital		(1880)	75
	FAILED		
University of Maryland		(1916)	73
Middlesex College of Medicine and Surgery		(1918)	57.7
Laval University		(1917)	60

Dr. Bowers also reports that 6 candidates were licensed at the special examinations held for Emergency Influenza Service, from Sept. 27 to and including Oct. 8, 1918. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Johns Hopkins University		(1903)	83.5
Harvard University		(1882) 79.7; (1918)	80.7
University of Michigan Medical School		(1918)	79.5
Eclectic Medical Institute		(1904)	*
Ohio State University College of Hom. Med.		(1918)	81.4

*No grade given.

Colorado October Examination

Dr. David A. Strickler, secretary of the Colorado State Board of Medical Examiners, reports the written examination held at Denver, Oct. 1, 1918. The examination covered 8 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 13 candidates who took the physician's and surgeon's examination, 11, including 5 osteopaths, passed, and 2, including 1 osteopath, failed. Two candidates were dismissed on request, and one candidate was refused examination on account of bad moral character. Twenty candidates were licensed on credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery		(1918)	90.7
Loyola University		(1917)	82.1
Baltimore Medical College		(1907)	81.8
Eclectic Medical University		(1917)	82.6
St. Louis University		(1918)	85.5
John A. Creighton Medical College		(1917)	81.7
	FAILED		
Chicago Hospital College of Medicine		(1918)	64.5

College	LICENSED ON CREDENTIALS	Year Grad.	No. Licensed
American Medical Missionary College		(1903)	1
Chicago Homeopathic Medical College		(1901)	1
College of Physicians and Surgeons, Chicago		(1893)	1
Hahnemann Med. Coll. and Hospital of Chicago		(1912)	1
Northwestern Medical College		(1883)	1
Northwestern University		(1896) (1908)	2
Rush Medical College		(1889)	1
Keokuk Medical College		(1897)	1
Tulane University		(1905)	1
University of Minnesota		(1917)	1
Barnes Medical College		(1909)	1
College of Physicians and Surgeons of St. Joseph		(1881)	1
Medico-Chirurgical College of K. C.		(1902)	1
St. Louis University		(1905)	1
University of Missouri		(1876)	1
John A. Creighton Medical College		(1903)	1
Medical College of Ohio		(1907)	1
Memphis Hospital Medical College		(1895)	1
Vanderbilt University		(1902)	1

Minnesota October Examination

Dr. T. S. McDavitt, secretary of the Minnesota State Board of Medical Examiners, reports the oral, practical and written examination held at Minneapolis, Oct. 1-4, 1918. The examination covered 15 subjects and included 80 questions. An average of 75 per cent. was required to pass. Seven candidates were examined, all of whom passed. Nine candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery		(1918)	83
Rush Medical College		(1918)*	91
College of Physicians and Surgeons, Baltimore		(1910)	81
University of Michigan Medical School		(1918)	91
University of Minnesota		(1918)†	88, 89
University of Pennsylvania		(1917)	92

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
College of Physicians and Surgeons, Chicago		(1908)	Illinois
Northwestern University		(1916) (1917)	Illinois
Johns Hopkins University		(1912)	S. Dakota
Boston University		(1909)	Texas
University of Michigan Medical School		(1912) (1917)	Michigan
Barnes Medical College		(1911)	Illinois
University of Nebraska		(1911)	Nebraska

* Received certificate for four years' work; degree will be granted after completion of internship.

† Received M.B. degree on completion of four years' work; M. D. degree will be granted on completion of internship.

Book Notices

ANATOMY OF THE HUMAN BODY. By Henry Gray, F.R.S., Lecturer on Anatomy at St. George's Hospital Medical School. Twentieth edition, revised and reedited by Warren H. Lewis, B.S., M.D., Professor of Physiological Anatomy, Johns Hopkins University. Cloth. Price, $7.50. Pp. 1396, with 1247 illustrations. Philadelphia: Lea & Febiger, 1918.

In the review of so well known a book, nothing more is necessary than to record the changes that have been made. In this edition the special sections on embryology and histology have been distributed among the subjects under which they naturally belong. New matter on physiologic anatomy, laws of bone architecture, and the mechanics and variations of muscles has been added, occupying much of the space formerly devoted to applied anatomy. The sections on ductless glands and the nervous system have been largely rewritten. By means of diagrams and descriptions, the sympathetic nervous system is presented in a more rational manner than heretofore. The central connections of the spinal and cranial nerves are also emphasized. Many new illustrations have been added, especially in the section on the central nervous system.

THE HUMAN SKELETON: AN INTERPRETATION. By Herbert Eugene Walter, Associate Professor of Biology, Brown University. Cloth. Price, $1.75. Pp. 214, with 175 illustrations. New York: The Macmillan Company, 1918.

This is an admirable, succulent and refreshing study of the human skeleton. It is not a study of "dry bones," but is instinct with life in every page. The medical student will find in it constant references to comparative anatomy and the evolution of various bones or their individual parts which will surely arouse his interest and explain the biologic relation of the lower animals to man. The teacher of anatomy will find a freshness of style which helps to make anatomy not only a useful study but an interesting one. The author has also a genial sense of humor, which is as welcome as it is rare in books of this sort. The illustrations are excellent and sometimes new and very informing. They often teach quite as much as the text.

The Growth of Medical Science.—We sometimes speak of the science of medicine; this is euphemism. Often we say medicine is an art founded on science. We like to think of practice as built on the solid foundations of anatomy, physiology and pathology, and these as resting on the bed rock of biology, chemistry and physics. This is camouflage. A better figure is that of a house being gradually moved from ancient piling to granite foundation; from empiricism to experimentalism; from superstition to science. It behooves those who live in the house during the moving operations not to step on the rotten planks in the floor.—E. P. Lyon, *Texas State Journal of Medicine.*

Medicolegal

Injury to Employee from Vaccination

(*Krout v. J. L. Hudson Co. et al. (Mich.), 166 N. W. R. 848*)

The Supreme Court of Michigan sets aside an award of arbitrators that was affirmed by the industrial accident board in proceedings brought for the recovery of compensation for injury alleged to have been sustained by an employee from vaccination. The court says that the claimant was employed as a fitter for the J. L. Hudson Company, respondent, when a general vaccination of the employees of the company was performed by a physician who was an official of the board of health of the city of Detroit, who acted at the request of the board of health. He testified that the request of the board was communicated to the officers of the company, and that those officers through subordinates conveyed the request to the several departments. The claimant, together with several hundred other employees, submitted to the operation. It was her claim that within half an hour after the operation she felt pain in her arm extending upward into her neck, and that this condition continued for four days when she was obliged to discontinue work. Two days later she called a physician who diagnosed her trouble as "acute mastoiditis, lymphatic infection." Five days later he operated on her. The claimant remained in the hospital some two or three weeks and was convalescent for a considerable period thereafter. While the physician who did the vaccinating had himself vaccinated approximately 100,000 persons and testified that he never knew or heard or read of a case of acute mastoiditis being caused by vaccination, it was the opinion of the claimant's family physician that the mastoiditis was the result of a lymphatic infection, the germ of which (streptococcus or pneumococcus) found entrance to the system through the vaccination.

Assuming, then, as found by the industrial accident board, that the mastoiditis was caused by the invasion of the germs through the vaccination wound (though the testimony contained in the record seemed strongly to discredit this theory), there was still an absolute lack of evidence tending to show that the germ secured lodgment in the claimant's arm in the course of her employment. It seems quite clear to the court that the claimant failed to show any connection between her employment in the store of the respondent and the infection following the vaccination. There was nothing in her employment which made her more susceptible to the reception of the germ infection than if she were walking on the street or attending a theater or church. In other words, the risk of infection was such and such only as that to which the general public is exposed. The claimant's injury, if it could be traced to the vaccination, arose, not out of her employment with the respondent, but through the active agency of the Detroit board of health, which for the benefit of the claimant as well as for the benefit of the general public requested her to submit to the operation. The right of the board of health to insist on general vaccination was not involved. The claimant submitted to the operation, though, she asserted, under protest.

No Reason Why Chiropractor Should Be Excepted

(*Williamson v. State (Ala.), 78 So. R. 308*)

The Court of Appeals of Alabama, in affirming a conviction of defendant Williamson of the offense of treating diseases of human beings by the system of treatment known as "chiropractic," without having a certificate of qualification from the state board of medical examiners, says that, on the admitted facts, the court could well have directed a verdict for the state, and there was nothing in the record of which the defendant could complain. Since the ruling in *Bragg's Case*, 134 Ala. 170, 32 So. 767, the statutes have been amended so as to deny to all persons the privilege of engaging in the calling or profession of treating or offering to treat diseases of human beings by any system of treatment whatsoever who have not obtained a certificate of qualification from the state board of medical examiners. The authority of the board to issue certificates of qualification is not limited to those who desire to enter the profession as homeopathic doctors, but extends to all schools or systems of treatment. The chiropractor is not excluded or discriminated against, and has the same right to apply for a certificate of qualification as does the homeopath or osteopath, and, if granted a certificate of qualification, there is nothing in the law that denies him the right to pursue his method of treatment. The statutory provision concerning persons who propose to engage in the practice of treating disease as a profession and for a livelihood is a police regulation designed to protect the public from the ignorant and incompetent, and it is a matter clearly within legislative competence to prescribe a test by which qualification may be determined, and to confer authority on a designated board to conduct the proper examination through which the test may be applied. This the legislature has done. There being no discrimination against the defendant or his school of practice, there was no reason why he should be excepted from the operation of this police regulation.

Irresistible Impulse as a Defense to Crime

(*Hankins v. State (Ark.), 201, S. W. R. 832*)

The Supreme Court of Arkansas says, in this homicide case, that in *Bolling* v. *State*, 54 Ark. 588, 16 S. W. 658, it approved the rules in *McNaghten's Case*, 10 Clark & F. Reps. 199, namely:

> That to establish a defense on the ground of insanity it must be proved by a preponderance of the evidence that at the time of committing the act the accused was under such defect of reason, from disease of the mind, as not to know the nature and quality of the act that he was doing, or, if he did know it, that he did not know that he was doing wrong.
>
> That if the defendant labors under a partial delusion only, and is in other respects sane, he must be considered in the same situation as to responsibility as if the fact with respect to which the delusion exists were real.

But in approving these rules of McNaghten's Case the court did not hold that the doctrine of irresistible impulse caused by disease of the mind would not be a good defense in cases in which the evidence adduced warranted it.

The McNaghten rules were announced in answer to questions propounded by the House of Lords requesting the judges to declare the law of England as to "alleged crimes committed by persons afflicted with insane delusion, in respect of one or more particular subjects or persons." Thus the questions and the answers assumed as a fact that a person might be insane on "one or more particular subjects or persons." Although this idea had prevailed since the days of Sir Matthew Hale, and obtained in England when the McNaghten rules were announced, it now appears that some distinguished authors on medical jurisprudence have come to the conclusion, following the lead of Lords Lyndhurst and Brougham, that, as a scientific fact, it is impossible for a person to be "insane on one or more particular subjects or persons, without being insane on all." Hence they say the rules of McNaghten's Case are wrong and should be wholly ignored. Now it does not follow that the McNaghten rules are unsound even though there be no such thing as partial insanity. The doctrine that the mind is an integer, and, if unsound on one subject from disease, is unsound on all, was announced by Lords Lyndhurst and Brougham in civil cases concerning the capacity to make a will. This court has not approved the doctrine to that extent in civil cases.

The learned authors on medical jurisprudence and the very few courts which have adopted the views that in the trial of criminal cases in which the defense of insanity is set up the entire question of responsibility is to be left to the jury with no other instructions than that, if the act was the product of mental disease, they should acquit, otherwise convict, have been led into this egregious error, as this court takes it, by treating insanity and irresponsibility as if they were convertible terms. By so doing they treat the entire issue in criminal cases, when the defense of insanity is set up, as one of fact, whereas the real issue in such cases is a mixed one of law and fact. It is an issue of fact for the jury to determine whether the accused at the time of the alleged act was afflicted with a mental disease, and an issue of law as to whether the mental disease is such as will

render him irresponsible. Therefore the issue of responsibility or irresponsibility in such cases should be submitted to the jury under proper instructions.

If the doctrine of the New Hampshire court that there are no legal rules or tests should be adopted throughout the American Union, it would be nothing short of a national calamity, because that innumerable multitude of mental abberants, commonly called cranks, would then find, over the insanity route, an easy path to immunity from any crimes they might commit. Hence the only safe and practical way of dealing with the subject is found in the legal tests or rules as formulated in McNaghten's Case, as far as they go, and by an addition thereto of the doctrine that irresistible impulse will excuse when caused by disease of the brain.

Impairment of Sight by Wood Alcohol an "Accident"

(Fidelity & Casualty Co. et al. v. Industrial Accident Commission et al. (Calif.), 171 Pac. R. 429)

The Supreme Court of California holds in a case in which a show card sign writer had been for about a year and a half in the habit of using dyes dissolved in wood alcohol and forced through a fine needle by air pressure, though ordinarily he used this appliance only a very small portion of the time, but during the holidays near the end of the period there was a very much greater use of the apparatus, and directly after the holidays, when the pressure of work had somewhat slackened, he used an extraordinary quantity of wood alcohol in cleaning the apparatus and in washing and cleaning his hands, and on January 7 his eyes and optic nerve were exposed to and came into contact with the vapor of wood alcohol in unusual quantity, involving the sudden impairment of his vision, that the injuries so received constituted an "accident" that arose out of and happened in the course of his employment, and were not the result of an occupational disease, within the meaning of the workmen's compensation act, which provided that, without regard to negligence, liability should exist against an employer for any personal injuries sustained by his employees by accident arising out of and in the course of the employment. The court says that many cases might be cited from other states having similar statutes and from England, in which like unforescen, unexpected and unintended injuries to employees have been classed as "accidents" and held sufficient to justify awards, such as injuries sustained by persons while lifting heavy objects, or through exposure to drafts or chilly air, or icy water in mines, or through the rupture of blood vessels brought on by unusual heat or overexertion, or through the inhalation of poisonous gases, and the like.

Rule as to Privileged Communications Applied to Roentgenologist

(Shaw v. City of Nampa (Idaho), 171 Pac. R. 1132)

The Supreme Court of Idaho applies the rule as to privileged communications to a roentgenologist, in this personal injury case, under the following circumstances, as stated by the court: When the plaintiff was injured, she employed a physician who immediately took her to another town, where he employed a physician to take a roentgen-ray picture of her broken arm. After the picture was taken and developed, the second physician or roentgenologist consulted with the first or plaintiff's regular physician relative to the interpretation of the picture and the treatment to be administered. Counsel for the plaintiff objected to the roentgenologist's testifying as to any facts learned while he was thus employed, which objection the supreme court holds was properly sustained. It appeared from the evidence, the court goes on to say, that the roentgenologist did more than perform mere mechanical work as a photographer, and that he used his knowledge and experience as a physician in interpreting the meaning of the picture, and advised with the plaintiff's regular physician as to what treatment should be given, the plaintiff paying the roentgenologist for his services. The trial court was justified in excluding such evidence as privileged communication, under the Revised Codes of Idaho, Section 5958, Paragraph 4.

Society Proceedings

COMING MEETINGS

American Physiological Society, Baltimore, Dec. 30-Jan. 1.
Society of American Bacteriologists, Boston, Dec. 30-Jan. 1.
Southern Surgical Association, Baltimore, Dec. 17-19.
Western Surgical Association, Chicago, Dec. 20-21.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

Nov. 15, 1918, **24**, No. 4

1 Development of Seminal Vesicles in Man. E. M. Watson.—p. 395.
2 Early Morphogenesis of Human Thyroid. E. H. Norris.—p. 443.
3 Lymphatico-Venous Communications in Common Rat and Their Significance. T. T. Job.—p. 467.

Archives of Internal Medicine, Chicago

Nov. 15, 1918, **22**, No. 5

4 *Physiology of Stomach. Control of Hunger by Drugs. H. Ginsburg and I. Tumpowsky.—p. 554.
5 *Case of Paroxysmal Tachycardia Characterized by Unusual Control of Fast Rhythm. E. P. Carter and A. M. Wedd.—p. 571.
6 *Concentration of Urea in Human Blood. L. Kast and E. L. Wardell.—p. 581.
7 *Effect of Ethylhydrocuprein on Experimental Pneumococcus Infections of Rabbits. J. H. Lewis.—p. 593.
8 *Experimental Study of Serum Therapy in Trichinosis. M. C. Hall and M. Wigdor.—p. 601.
9 *Metabolism in Hemochromatosis. C. W. McClure.—p. 610.
10 Experimental Bacteremia. J. W. McMeans.—p. 617.
11 Primary Atrophy of Pallidal System of Corpus Striatum: Pathology of Paralysis Agitans. J. R. Hunt.—p. 647.

4. **Control of Hunger by Drugs.**—The authors report on the effects of various common drugs on the hunger contractions by the use of the balloon method. Atropin sulphate in doses from 1/80 to 1/40 grain hypodermically invariably inhibited contractions and counteracted the effect of pilocarpin and physostigmin in this regard. Pilocarpin, from 1/12 to 1/8 grain, hypodermically, augmented the contractions, accompanied by diminished pulse rate. Physostigmin produces stimulation, particularly by intravenous administration. Coincident with the gastric manifestations, the pulse rate fell as low as 50 beats per minute, and gradually returned to normal with abolition of the gastric effects. Profound inhibition occurs with doses of 1 c.c. of 0.5 per cent. solution of cocain per kilogram. A stimulating effect from camphor is observed only when the drug is administered intramuscularly. In large doses the contractions appear to become more frequent and intense, and the period of activity is prolonged.

As widely employed as strychnin is for its tonic value, there has been no experimental evidence for its supposed gastric effect. With doses of 1/90 to 1/60 grain subcutaneously, stomach tonus was increased, but at the same time the general excitability of the animal was increased so that the increased height of the writing level may have been due to the increased tonus of the abdominal muscles. At the same time, however, there appears to be a definite increase in the hunger contractions themselves. Inhalation of 5-minim pearls of amyl nitrite, often repeated, after short intervals, causes only a temporary inhibition which disappears as soon as the drug is removed from the nostril. Administration of epinephrin causes prompt and marked inhibition of the hunger contractions. Using ampules of ergot intravenously, a temporary inhibition usually followed by lowered tonus was noted, although contractions ensued. Intramuscular injection in one instance gave a tremendous steplike rise, with extremely high tonus level, followed by a short rest, and then another active period. The effect of pituitary preparations was remarkably like that of epinephrin.

5. **Paroxysmal Tachycardia.**—Carter and Wedd report a case of an ectopic rhythm originating in the upper level of the atrium near the pacemaker, conspicuously under the control of subjective inhibitory reflexes, but utterly uninfluenced by vagal stimulation. There was no demonstrable evidence of any accelerator influence or control over the tachycardia.

6. **Concentration of Urea in Human Blood.**—Of 244 hospital patients whose blood had a urea nitrogen concentration of less than 35 mg. per 100 c.c., 206, or 84 per cent., had a concentration of not more than 20 mg. per 100 c.c. Of these 206 cases only eighty-three, or 40 per cent., showed other evidence of renal impairment; but of the remaining thirty-eight cases, twenty-nine, or 77 per cent., showed other renal symptoms. Kast and Wardell conclude that 20 mg. per 100 c.c. may be taken as the upper normal limit of urea nitrogen in the blood of hospital patients, and that for diagnostic purposes the estimation of the blood urea is a satisfactory index of the functioning power of the kidney.

7. **Effect of Ethylhydrocuprein on Experimental Pneumococcus Infections.**—According to Lewis, ethylhydrocuprein can be given to rabbits intravenously and continuously over protracted lengths of time at the rate of 10 mg. per kilogram per hour, without apparent toxic effects. When injected intravenously into rabbits at the rate of 10 mg. per kilogram per hour for seven hours, ethylhydrocuprein produces a slight bactericidal action of the serum. A much higher bactericidal action is produced when it is injected at the rate of 15 mg. per kilogram per hour for seven hours. The effect of a fatal dose of pneumococcus on rabbits is not affected by the continuous intravenous injection of ethylhydrocuprein, in spite of the fact that the animal's blood may be distinctly bactericidal in vitro. The continuous intravenous injection of a soluble bactericidal therapeutic drug has theoretical advantages over the usual single or intermittent dosage. Lewis suggests that the failure of the method with ethylhydrocuprein is probably due to the nature of the drug and not to the method.

8. **Experimental Study of Therapy in Trichinosis.**—Hall and Wigdor carried out a number of experiments in testing the prophylactic and curative value of serum from animals recovered from trichinosis. Their experiments bear out the conclusions of Schwartz to the effect that serum from animals convalescent from trichinosis, when injected into other animals or fed to them mixed with trichinous meat, does not inhibit the customary development of trichinae. On the other hand, theoretic considerations, the clinical observations of Salzer, and the longevity data from their experiments lead Hall and Wigdor to the conclusion that such a serum may be of decided value in combating the toxic features of trichinosis, a conclusion which is in general agreement with Salzer's belief in the value of such a serum.

9. **Metabolism in Hemochromatosis.**—A retention of food iron was found by McClure in the metabolism experiment in a case of hemochromatosis. The hypothesis that there is an abnormal retention of iron in hemochromatosis is held to be consistent with the experimental findings. The basal metabolism and the respiratory quotient, determined by indirect calorimetry, were normal. These findings show that there was no gross disturbance in the intermediary metabolism.

Boston Medical and Surgical Journal

Nov. 21, 1918, **179**, No. 21

12 Art of Medicine. Oration Delivered at Harvard College Commencement in July, 1783. E. Eliot.—p. 638.
13 Delay in Surgical Treatment of Cancer. C. C. Simmons.—p. 639.
14 Ozone in Swimming Pool Purification. W. A. Manheimer.—p. 642.
15 *New Treatment for Paralysis Agitans. W. B. Swift.—p. 644.
16 Types of Men as Observed Among Recruits. J. M. Taylor.—p. 646.

15. **New Treatment for Paralysis Agitans.**—The method of treatment used by Swift consists in muscular movements of a simple nature gone through very slowly, at the rate of about 1 foot to the second, with strong mental concentration on the movement while it is in progress. First come movements of the right foot, then of the left, then of the legs successively, then of the right and left arms in order, then of both arms, and finally of the hands and fingers. The object is not muscular development but development of nervous control over the muscles. The movements should be regular and they should be prescribed definitely. No particular value need be attached to any special set of exercises, because the nervous control is the same in one as in another; however, all the exercises must be done very slowly, at the rate of about 1 foot of movement to the second, if any benefit is to result.

Three cases of definite improvement are mentioned by Swift to show what the method has actually accomplished. One patient complained of a very severe tremor and of great difficulty in getting to sleep at night. Six months of treatment reduced the tremor perceptibly and made it possible for her to get to sleep in fifteen minutes. After only three weeks of treatment a man overcame his tremor to such an extent that he could read his newspaper while holding it in his hands, a thing impossible to him before. A third patient, after three months of treatment, reported that her tremor was reduced by about one third.

Canadian Medical Association Journal, Toronto

November, 1918, **8**, No. 11

17 *Treatment of Infected Wounds Under Battle Conditions Arriving Late, Without Previous Surgical Treatment. G. W. Crile.—p. 961.
18 Meckel's Diverticulum-Cases Causing Intestinal Obstruction. R. Graham.—p. 966.
19 *Wounds of Chest; New Method of Treatment of Infected Hemothorax. W. Hutchinson.—p. 972.
20 Mouth Infection as Source of Systemic Disease. B. A. Murray.—p. 988.
21 "Preventive Medicine." F. H. Wetmore.—p. 993.
22 Terminal Disinfection. W. H. Hattie.—p. 1001.
23 Why Federal Legislation is Necessary in Order That Venereal Diseases May be Effectively Dealt With in Canada. P. H. Bryce.—p. 1005.
24 Advantages of Early Diagnosis and Treatment of Syphilis. G. O. Scott.—p. 1012.
25 Prevention of War Neuroses. T. H. Ames.—p. 1018.

17. **Treatment of Infected Wounds Under Battle Conditions.**—This is a report of a "group research" by the Lakeside Unit on the treatment of infected wounds at a base hospital during a battle. In this series, the patients were on the operating table for their first surgical treatment on an average of fifty-eight and one-third hours after injury, the shortest period being twenty-four hours, the longest 150 hours. Every wound that had not progressed to abscess and new tissue formation was treated by complete surgical revision. In large wounds, no attempt was made to excise *en bloc* within the line of uninfected tissue, but the devitalized tissue was dealt with in an opportunist manner. But little skin was excised. Ample exposure was always made, usually by vertical incisions.

After surgically meeting the indication for today, namely, complete revision, the "tomorrow" of the wound was considered, and certain cases were treated by incision of fascia overlying swollen muscles; incision of the skin and superficial fascia, placed where it seemed certain that within the first and second postoperative days swelling and tension would appear; that is, the operation that was anticipated as being necessary day after tomorrow was done now, but owing to these anticipatory or prophylactic incisions, little or no swelling occurred later. When completed, the wound was flat and soft and anticipatory; the obstacles to its biologic defense had been removed. When the wound was surgically completed, it contained many bacteria. It was in the state of a heightened defense clinically. There was active phagocytosis and increased blood supply everywhere; and the infecting bacteria had not gained virulence by selective struggle against antiseptics.

In the period there were admitted, 1,274 patients. Of these, 660 were walkers, and 614 were stretchers. Of the 614 stretcher cases, 194 required no operation, because they were medical cases, or because the wounds were taking care of themselves, and 420 required operation. Of the 420 operative cases, sixty-seven were marked for delayed primary suture; forty-four superficial wounds were immediately sutured. Of the forty-four immediate sutures, all were successful; of the successful cases, there were two fractured humeri and one fractured radius. Of the sixty-seven delayed primary sutures, 91 per cent. healed without requiring removal of any stitches; 6.1 per cent. were partial successes; 2.9 per cent. were failures. Among the total number, ninety-three were compound fractures. There were four, or 0.9 per cent., deaths. There

was no case of bacteremia or septicemia. No case was rejected for operation because it was thought that the infection had gone too far. The patients not suitable for delayed suture were quickly ready for evacuation.

The results from this work show that surgical revision of wounds untreated for fifty-eight and one-third hours causes no harm and does much good. It is felt that with further experience a greater percentage of delayed infected wounds, including compound fractures, will be closed both primarily and delayed. The presence or the absence of chemical antiseptics (flavine, Wright's hypertonic pack, alcohol, dichloramin-T, chlorcosane) made no notable impression on the clinical course after operation. Crile says that these results are a tribute to the judgment of the surgeons in the forward area who selected the cases for evacuation without operation and who elected not to pack gauze nor insert drainage tubes into these wounds, but merely dressed them.

19. **Treatment of Infected Hemothorax.**—Impressed by the great improvement in the results obtained by the cleaning out and closing of knee joints which had become infected by wounds, over the results obtained by the old method of drainage, Hutchinson applied this principle to the treatment of infected hemothorax. The method applied is as follows: As soon as the hemothorax is found to be infected, clinically and bacteriologically (nor merely bacteriologically), the patient is taken to the operating room and placed in a partially sitting position on the table. He is then turned a little toward the good side so that the post axillary line is brought well into view. The best anesthetic to use in these cases, Hutchinson says, is nitrous oxid and oxygen. If the patient is in a very bad condition, Hutchinson uses a local anesthetic up to the time of resecting the rib and then a general anesthetic. Chloroform and ether should never be administered. A portion of rib, long enough to allow the hand to be passed through the opening, should be removed and the blood allowed to flow out. The clot is then removed by the hand, all parts of the cavity explored and light adhesions broken down. Then by means of large pieces of gauze on dressing forceps, the remainder of blood and clot is removed. After this, the cavity is washed out with saline and again mopped out and a running suture inserted in such a way as to include the pleura and intercostal muscles. This suture should be left quite loose so that a small quantity of some antiseptic can be poured into the pleural cavity. This antiseptic should be spread all over the walls of the cavity by means of a small piece of gauze on long dressing forceps. As soon as this has been done, the running suture is drawn tight, thus closing the pleural cavity completely. The muscles and skin are then closed and a dry dressing applied.

Forty-eight hours after the operation, the chest should be aspirated, thus removing a quantity of serum and air. Three or four aspirations are necessary during the course of convalescence. The antiseptics Hutchinson used in these cases include eusol solution, a suspension of bipp in liquid paraffin in the following proportions, bipp one-half ounce, liquid petrolatum 6 ounces, flavine solution 1:5,000, and physiologic sodium chlorid solution, the amount left in the chest being 3 ounces. Of twenty-nine cases treated in this manner, sixteen remained closed, thirteen reopened. The bipp gave the best results.

Iowa State Medical Society Journal, Des Moines

Nov. 15, 1918, **8**, No. 11

26 Relationship of Respiratory Infection to Digestive Disturbances in Infants and Children. A. H. Byfield.—p. 385.
27 Pellagra in Iowa—With Case Reports. F. A. Ely.—p. 388.
28 Importance of Sanitation in Zone Immediately Surrounding the City. F. A. Steelsmith.—p. 392.
29 Fracture of Hyoid Bone. W. W. Pearson.—p. 395.

Journal of Immunology, Baltimore

July, 1918, **3**, No. 4

30 *Immunizing Properties of Bacterial Vaccines Prepared After Various Methods. M. W. Perry and J. A. Kolmer.—p. 247.
31 *Bactericidal Action of Whole Blood, New Technic for Its Determination. G. D. Heist, S. Solis-Cohen and M. Solis-Cohen.—p. 261.
32 Complement Fixation with Protein Substances. R. L. Kahn and A. McNeil.—p. 277.
33 *Relation Between Proteolysins and Hemolysins. A. McNeil and R. L. Kahn.—p. 295.
34 *Influence of Arsphenamin and Mercuric Chlorid on Complement and Antibody Production. I. Toyama and J. A. Kolmer.—p. 301.

30. **Immunizing Properties of Bacterial Vaccines.**—All vaccines of *B. typhosus* prepared in various ways and including living, autolyzed, chemical and heat-killed and alcohol-killed sensitized sediment, usually produced slight leukocytosis and slight increase of temperature when administered to rabbits by subcutaneous injection in doses according to body weight and comparable to those given to persons; the alcohol-killed sensitized sediment produced these nonspecific reactions in highest degree. Agglutinin and complement fixing antibodies were produced in highest degree by the administration of living and autolyzed vaccines followed in order by the mercurophen-killed, tricresol-killed, heat-killed and alcohol-killed sensitized sediment vaccines. While the agglutination and complement fixation reactions showed in some instances a tendency toward specificity on the part of these antibodies for the particular antigen (vaccine) of *B. typhosus* responsible for their production, the results generally do not indicate definitely the development of specificity to this degree. An antigen of *B. typhosus*, prepared by cultivating the microorganism in plain neutral broth for forty-eight hours and sterilizing the culture with 0.1 per cent. of commercial (40 per cent.) aqueous solution of liquor formaldehydi in a cold dark place over a period of four to five days, proved of particular value in macroscopic agglutination tests. The various vaccines of *B. typhosus* which Perry and Kolmer used as antigens in the complement fixation tests may be arranged as follows in order of antigenic sensitiveness: living and autolyzed; mercurophen-killed; tricresol-killed; alcohol-killed sensitized sediment and heat-killed.

31. **Bactericidal Action of Whole Blood.**—If small numbers of living pneumococci are seeded, by a suitable method, in pigeon's blood before it coagulates, the pneumococci fail to multiply. On the contrary, if pneumococci are seeded in mouse's or rabbit's blood before it coagulates the pneumococci grow with great vigor. The evidence points to the presence in the uncoagulated blood of the pigeon of a bactericidal factor which is absent from the blood of the mouse or rabbit. Fresh defibrinated blood of both immune and susceptible species is an excellent culture medium for the pneumococcus, which shows that the bactericidal factor disappears during the process of coagulation. Pneumococci fail to multiply in the blood of a rabbit which has been suitably inoculated with killed pneumococci, the reaction being specific to type. The blood of a man who has recovered from lobar pneumonia prevents the growth of pneumococci belonging to the type which caused his disease. The globoid bodies of poliomyelitis grow readily in uncoagulated human blood. They fail to grow when seeded in uncoagulated rabbit blood. Many of the nonpathogenic bacteria usually met with as contaminations in bacteriologic work, as, for instance, *B. subtilis*, fail to grow when seeded in uncoagulated blood. The tentative hypothesis advanced by the authors to cover the facts observed by them is that when small numbers of bacteria are seeded in blood before it has had time to coagulate only those bacteria grow and multiply which are pathogenic for the animal from which the blood is taken.

33. **Relation Between Proteolysins and Hemolysins.**—An attempt was made by McNeil and Kahn to find whether proteolytic substances are produced in rabbits on protein injections, if a procedure simulating the production of hemolytic substances in these animals be resorted to. Proteolysis was determined by observing the increase in amino-acid nitrogen after digesting mixtures of the immune serum, the specific protein and complement for a given period. The results gave no evidence of any increase in amino-acids under these conditions, which would indicate that hemolysis and proteolysis are probably two distinct phenomena.

34. **Influencing Complement and Antibody Production.**—The general result of the experiments made by Toyama and Kolmer indicates that while massive doses of arsphenamin and mercuric chlorid tend to suppress antibody production and cause a decrease in hemolytic complement, smaller doses tend to increase the production of antibody (agglutinins)

and augment the complement content after a primary decrease. The authors suggest that it is probable that both drugs administered in the treatment of syphilis owe part of their therapeutic efficacy to their influence on increasing antibody production and complement.

Journal of Medical Research, Boston

September, 1918, **39**, No. 1

35 *Immunity and Tissue Transplantation. Influence of Immune Serum on Reactions About Transplanted Tissues. M. S. Fleisher.—p. 1.
36 Benzidine as a Peroxidase Reagent for Blood Smears and Tissues. G. S. Graham.—p. 15.
37 *New Indicator for Direct Reading of Hydrogen Ion Concentration in Growing Bacterial Cultures. J. Bronfenbrenner.—p. 25.
38 Methods of Isolation and Identification of Members of Colon-Typhoid Group of Bacteria. Late Fermentation of Lactose. J. Bronfenbrenner and C. R. Davis.—p. 33.
39 *Syngenesioplastic Transplantation of Thyroid in Guinea-Pig. L. Loeb.—p. 39.
40 *Bacteriology of Tuberculous Kidneys. L. H. Spooner.—p. 59.
41 *Multiple Transplantations of Thyroid and the Lymphocytic Reaction. L. Loeb.—p. 71.
42 *Increased Susceptibility of Roentgenized Guinea-Pigs to Inoculation with Tubercle Bacilli. E. Kellert.—p. 93.
43 *Properties of Pneumotoxin and Its Probable Function in Pathology of Lobar Pneumonia. C. Weiss.—p. 103.
44 Pigmentation of Nerve Cells. Nonfatty, Melanotic Pigment in Dog and Rabbit Produced by Chronic Depression. D. H. Dolley and F. V. Guthrie.—p. 123.

35. **Immunity and Tissue Transplantation.**—A series of experiments was carried out by Fleisher in which the influence of the immune serum on regeneration, leukocytic and connective tissue reaction was studied. Pieces of guinea-pig kidney were transplanted into the subcutaneous tissue of the abdomen of animals, and removed and studied at various periods. At least four pieces of kidney were examined at one, two, four, five, seven, ten, twelve and fourteen days after transplantation; in many cases a very much larger number of pieces was examined. It was noted that in passively immunized animals about homoiotransplants the same reactions occur as in normal animals; about heterotransplants there is possibly a slower clearing of the peripheral portion of the tissue of leukocytes, but otherwise the reactions, even the leukocytic reactions, are like those in normal animals. When tissue is brought into contact with immune serum for a short time before transplantation, there is possibly a slight and brief slowing of connective tissue reaction and regeneration in homoiotransplants. In heterotransplants there is interference with regeneration, which is, however, probably due to the interval elapsing between removal from the living animal and transplantation into the host, and also a slower invasion by leukocytes.

The results of these experiments would suggest that substances in the body fluids of immunized animals have but little influence on the regeneration of transplanted tissue, and that the slowing of leukocytic invasion is in large part due to an action of the serum. The results further suggest that the more marked leukocytic reaction seen about transplants in either immune heterologous animals or immune homologous animals is a direct and independent manifestation of the immunity to the tissue. If these conclusions be correct it appears that, in immunity to tissue transplantation, tissue reactions and especially the reactions of leukocytes play a more important part than do the reactions called forth or produced by the body fluids.

37. **Reading of Hydrogen-Ion Concentration in Bacterial Cultures.**—Bronfenbrenner and Davis use a mixture of equal parts of 0.5 per cent. watery solution of China blue with 1 per cent. solution of rosolic acid in 95 per cent. alcohol. They call it "CR." CR can be added directly to mediums, and permits easy, direct estimation of hydrogen-ion concentration in the culture at all times. Its colors on both sides of neutrality are very brilliant, and therefore a very small amount of indicator is sufficient to give to the medium the desired intensity of color. Bronfenbrenner and Davis keep the indicator in a concentrated solution and add 1 c.c. of this stock solution to each 100 c.c. of medium before sterilization. Heating does not affect this indicator. While the indicator solution keeps sterile on account of alcohol it contains, the heating in sterilization drives it off. Even in the concentration twenty-five times that in which it is present in the medium, CR indicator shows no trace of bactericidal action.

39. **Syngenesioplastic Transplantation.**—The transplantation into early related individuals of the same species is termed syngenesioplastic transplantation by Loeb, a term analogous to those used in the case of transplantation into the same animal, into other individuals of the same species and into different species. He transplanted the thyroid in guinea-pigs from mother to children, from sister and brother to sister or brother, and in one case from child to mother. He followed the fate of the transplanted tissues during different periods after transplantation. After syngenesioplastic transplantation of thyroid in guinea-pigs, the results obtained are intermediate between those obtained after autotransplantation and homoiotransplantation. These findings agree with previous results obtained in the rat and with different organs. After syngenesioplastic transplantation, the thyroid behaves in the majority of cases, for a certain period of time, like an autotransplanted tissue, but in most cases gradually an intense lymphocytic infiltration takes place which secondarily destroys the healthy acini. These experiments are a further proof of the rôle of the lymphocytes in the destruction of tissues under the influence of syngenesiotoxins and homoiotoxins.

In a smaller number of cases of syngenesioplastic transplantations, the fibrous tissue also is increased, the fibroblasts behaving similar to the fibroblasts in cases of homoioplastic transplantation. While in these latter cases the lymphocytic infiltration may be relatively diminished in intensity, the acini are usually not so well preserved as a result of pressure by fibrous tissue. The rapidity with which the transplants attract lymphocytes in various kinds of transplantations is graded, and these gradations correspond to the gradations in the relationships between cell proteins and constituents of the body fluids in donor and host.

40. **Bacteriology of Tuberculous Kidneys.**—The positive proof of the existence or nonexistence of mixed infection in tuberculous processes can be obtained only by a careful bacteriologic examination of such lesions. Inasmuch as a study of pulmonary processes is unsatisfactory, for obvious reasons, Spooner selected the kidney. Eleven tuberculous kidneys were examined. One of these contained a deep sinus, and was secondarily infected. This was excluded from the statistics. In the remaining ten, positive cultures of the tubercle bacillus were obtained in five. There was no growth on any medium in the remaining five, and none on plain and anaerobic mediums in the five positive cases after a period of three months.

In five, or 50 per cent., a pure growth of the tubercle bacillus was obtained. In no case was any organism of secondary infection recovered. In only two cultures was any other growth found. Such growth was always found in a great minority of the cultures examined. Two kidneys, although probably actively tuberculous consisted merely of large pockets of pus and caseous tissue. For this reason the tubercle bacillus could not be recovered. "Pus sacs," referred to in literature for years as evidences of mixed infection, were sterile, without exception.

Tissue implantations yielded positive results in 66 per cent. of the positive cultures; pus in 33 per cent. The growth of the organism in every case was evident in two to five weeks after the original inoculation. In every instance coverglass preparations showed typical acid-fast bacilli.

Cultures from seven urines of patients suffering from tuberculosis of the kidney were examined. In three instances the urine obtained by catheter from the bladder showed growth of organisms other than the tubercle bacillus. In two cases no growth could be obtained. In four cases the urine obtained from the ureter on the infected side showed no growth on ordinary culture mediums after forty-eight hours' incubation. In all of these cases, pus was present in the urine, and tubercle bacilli were demonstrated in smears. Hence Spooner concludes that the urine of tuberculous kidneys, obtained from the ureter, like the tissues of these kidneys, shows no evidence of mixed infection. The bladder urine is often contaminated by other organisms, yet the ureter specimens remain sterile on plain mediums. The clinical diagnosis of

renal tuberculosis is suggested by the presence of acid-fast bacilli in the urine. If a pus-containing urine, obtained from the ureter, shows no growth on simple culture mediums after forty-eight hours' incubation, another and very important link is added to the chain of diagnosis of tuberculosis of the kidney.

41. **Multiple Transplantations of the Thyroid.**—Loeb says that in multiple transplantations of the thyroid the individuality differentials of the thyroids of different animals are preserved; they may find expression in a reaction of the host towards the transplant, which is similar in the case of lobes derived from the same animals and differs in the case of lobes derived from different animals. The lymphocytic reaction in the second transplant is not markedly accelerated or intensified over control transplants, even in cases in which the first transplantation had been multiple; this is especially noticeable in experiments in which the second transplant had remained in the host during a period of three or four days. In a considerable number of cases of multiple transplantation, the first transplants were found to a great extent, or completely, destroyed. It is at present uncertain to what extent this is due to unfavorable conditions of a more or less accidental character or to the production of immune substances.

Loeb's results make it very probable that the lymphocytic reaction is, in part, at least, a response of the host to primary homoiotoxins (syngenesiotoxins) and that it is not entirely the result of the development of immune substances. It is probable that the cell constituent which, directly or indirectly, gives rise to the original formation of homoiotoxins (syngenesiotoxins), may also act as antigen and call forth the production of immune substances which, after combination with the antigen, act on the host cells in a way similar to the primary homoiotoxins (syngenesiotoxins).

42. **Increased Susceptibility of Roentgenized Guinea-Pigs to Tubercle Bacillus Inoculation.**—The technic used by Kellert was: 5 milliamperes; time, 10 minutes; spark gap, 7 to 8.5 inches. A Wappler generator and Coolidge tube having a moderately sharp focus were used. The bottom of the box containing the animal was placed at a distance of twelve inches from the center of the target. A thin wood cover closed the box. The animals were injected with tubercle bacilli either intraperitoneally or subcutaneously, and for each radiated animal a nonrayed one was provided as a control. Exposures were made on the day of inoculation or the following day. After exposure the radiated animal and control were kept in the same cage under similar conditions Kellert found that radiated guinea-pigs are rendered more susceptible to contaminating and to secondary infection, and that the method is of no practical value in routine diagnosis and is unreliable unless carefully controlled by the use of the accepted methods which have become standard in laboratory practice.

43. **Properties of Pneumotoxin.**—Concerning the share of pneumotoxin in the pathology of lobar pneumonia, Weiss suggests that prolonged chilling of the body due to exposure initiates the continuous liberation of large quantities of toxin by the action of normal body enzymes on pneumococci normally localized in the lung alveoli and that this accounts for the initial toxemia. The formation of the exudate is considered to be in part due to an increased permeability of the endothelial cells of the lung for various serum albumins, globulins, fibrinogen and enzymes as the result of the injury exerted by the toxin on their cement substance. The toxin is also regarded as a lymphagogue. It hinders the autolysis of the exudate and the favorable action of antipneumococcus-immune bodies and thus aids in the formation of toxic proteoses and peptones. With the production of excess amounts of specific antibodies and of bactericidal and phagocytic substances, the deleterious and autolysis-inhibiting influences of the toxins and proteoses are neutralized. Autolysis of the exudate is now unhindered and the products are nontoxic amino acids. The equilibrium of this system being governed by the laws of mass action, the change from febrile toxemia to the afebrile atoxic state is necessarily an abrupt one—crisis. Hemoptysis and icterus in pneumonia are regarded as partly or entirely the result of the hemolytic activity of pneumotoxin.

Medical Record, New York

Nov. 23, 1918, **94**, No. 21

45 Psychoneuroses of the War. H. Wakefield.—p. 881.
46 Tonic Spasm as a Cause of Disability, and the Remedy. J. M. Taylor.—p. 891.
47 Gingival Septicopyemia. W. F. Dutton.—p. 893.
48 Nature of Cancer, with Special Reference to Uterine Disease. H. Crutcher.—p. 895.
49 Chronic Obscure Fever in Children. J. Epstein.—p. 897.
50 Occupation for Tuberculous Patients. M. Kahn.—p. 899.

Modern Hospital, Chicago

November, 1918, **11**, No. 5

51 At the Sign of the Blue Cross. C. W. Forward and G. F. Lees.—p. 349.
52 Educational Work for Children at Lakeside Hospital. A. R. Warner, Cleveland.—p. 354.
53 Extending the Influence of a Hospital: Teaching of Diagnosis by Means of Case Records. F. M. Painter.—p. 355.
54 Institutions for the Care of Epileptics. W. T. Shanahan.—p. 364.
55 Hospital Accounting. C. A. Porter and H. K. Carter.—p. 371.
56 Bahama General Hospital and Asylum. T. Milne.—p. 376.
57 New Four-Patient Cottage at Barlow Sanatorium. W. C. Klotz.—p. 378.
58 A Practical Remedy for Hospitalization. M. T. McEachern.—p. 379.
59 Relation of Laboratories to Hospitals. W. C. MacCarty.—p. 381.

Nebraska State Medical Journal, Norfolk

November, 1918, **3**, No. 11

60 Indications for and Results of Use of Metal Bone Plates, Bone Graft, and Conservative Methods in Treatment of Fractures. A. F. Jonas.—p. 329.
61 Complemental Jejunostomy. A. I. MacKinnon.—p. 335.
62 Results of Tonsillectomy. L. B. Bushman.—p. 338.
63 Infantile Scurvy. W. O. Colburn.—p. 340.
64 Sidelights on Carcinoma. O. C. Morrison.—p. 342.
65 Thrombosis and Embolism of Mesenteric Vessels. B. B. Davis.—p. 345.

New York Medical Journal

Nov. 23, 1918, **108**, No. 21

66 Nasal Complications of Epidemic Influenza. G. W. MacKenzie.—p. 885.
67 Surgical Pathology of Epidemic Influenza. J. W. Kennedy.—p. 887.
68 Influenza in U. S. Marine Hospital. Z. I. Sabshin.—p. 888.
69 Prophylaxis of Influenza. B. Frankel.—p. 894.
70 Influenza and Suprarenal Glands. J. H. M. A. Von Tiling.—p. 895.
71 Danger of Mask for Protection Against Influenza. J. C. Minor.—p. 895.
72 *A Wassermann Modification. M. Shaweker.—p. 896.
73 Three Cases of Eye Injury. D. Roy.—p. 898.
74 Phenol in Tetanus. D. Delfino.—p. 900.
75 Wounds and Shell Shock and Their Cure. F. B. Turck.—p. 901.

72. **A Wassermann Modification.**—Besides the diluents, only three reagents are used by Shaweker, namely, patient's serum, which must be fresh; acetone insoluble antigen, and guinea-pig cell suspension. The patient's serum serves the triple capacity of complement, amboceptor and reagent. Antigen is made after the method of Noguchi and used in strength of one fourth of the anticomplementary unit. When active serum is used, the acetone-insoluble antigen must be used to reduce the chances of false prototrophic fixation. The cells are collected by cardiac puncture of an anesthetized guinea-pig. The blood is citrated and given two or more subsequent washings with normal salt solution. Natural agglutinins have not been observed. The patient's serum is used in doses of 0.1 c.c. to each tube and should be fresh, free from cells, and not hemolyzed. In testing a spinal fluid, 0.1 c.c. of a known negative serum must be used to furnish complement and amboceptor. The titrations required in this modification are to determine the anticomplementary unit of the antigen used and the cell load which can conveniently be handled by the 0.1 c.c. of patient's serum used. The icebox fixation is used for the first step, four hours to over night being the time allowed. One or two shakings of tubes is sufficient.

Wisconsin Medical Journal, Milwaukee

November, 1918, 17, No. 6

76 Cardiac Disturbances from Standpoint of Military Service. J. S. Evans.—p. 213.
77 Health Insurance. J. R. Commons.—p. 218.
78 Further Objections to Compulsory Health Insurance. E. H. Ochsner.—p. 224.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal

Nov. 2, 1918, **2**, No. 3018

1 *Purulent Bronchitis Complicating Measles and Rubella. W. M. MacDonald, T. R. Ritchie, J. C. Fox and P. B. White.—p. 481.
2 Differential Diagnosis of Scarlet Fever, Measles and Rubella. J. S. Warrack.—p. 486.
3 *Incubation Period of Influenza. P. MacDonald and J. C. Lyth. —p. 488.

1. Purulent Bronchitis Complicating Measles and Rubella.—An epidemic of exanthematous disease (418 cases) complicated by purulent infection of the bronchi attacked several hundred men. In the large majority there was a copious frothy or mucopurulent bronchorrhea, in seventy-five there was a severe purulent bronchitis, and of these twenty-six died. Taking into consideration only the definite cases of septicemic bronchitis the mortality amounted to one third of the men attacked, but, as practically all the cases showed signs of a much more severe bronchial catarrh than ordinarily occurs in measles, and as the sputa in these cases contained the same organisms as in the more severe ones, the authors believe that it is reasonable to regard them all as cases of multiple infection, and, by doing so, to reduce the mortality to about 7 per cent. Bronchitis with purulent expectoration was common to all the cases, but the severe type consisted rather of a septicemia accompanied by various lung lesions which were not constant but ranged from bronchial catarrh to bronchopneumonia, pleurisy, basal congestion, or lobar pneumonia. No one of these types prevailed, but the seriously ill patients who survived long enough passed through all these phases in succession, although patients usually died before definite lobar pneumonia was well established.

The most striking feature of the physical examination in the early stages was the absence of signs suggesting a marked or extensive involvement of the lung tissue in patients who presented all the clinical features of a severe pneumonia. In the mild cases the breath sounds were harsh and were accompanied by some sharp or sonorous rhonchi and by a few medium crepitations at the base of the lungs. In the more severe cases the signs of bronchitis were more marked and passed into those of bronchopneumonia with patches of dulness on the posterior aspect, deficient or, less frequently, bronchovesicular breathing, and usually some pleural friction. Signs of pleural effusion were rare and empyema never supervened. Evidence of consolidation (at one or both bases, more often the right, and occasionally at one apex) was present in most of the fatal cases for a day or two before death, but in some these signs were absent or very slightly marked. Toward the end coarse bubbling râles could be heard all over both lungs.

The use of drugs was confined to symptomatic treatment in the way of combating the great strain placed on the heart, oxygenating the lungs, and so aiding the reduced area of normal lung tissue in its functions, helping the drainage of the pus from the lungs by expectoration, and hindering the growth of pyogenic organisms in the lungs by local applications. For this purpose heart stimulants such as brandy, strychnin, and digitalis, ammonium carbonate, oxygen warmed and alcoholized, stimulant expectorants, and antiseptic inhalations were tried.

Three different vaccines were used; no one of these three included all the organisms which appear to be responsible for the clinical symptoms. A. A mixed stock vaccine, consisting of 1,250 million Pfeiffer's bacillus and 250 million Friedländer's bacillus per cubic centimeter. B. A vaccine consisting of two preparations containing (*a*) *Streptococcus lanceolatus* and (*b*) *Streptococcus pyogenes-longus*. C. A. vaccine consisting of two preparations, containing (*a*) *Staphylococcus aureus* and (*b*) pneumococcus, a streptococcus and a gram-negative bacillus. Vaccine A was given always in doses of 300 million Pfeiffer's and 60 million Friedländer's with an interval of four days before a second dose. There was never any untoward reaction. Vaccine B was given in most cases in doses of 25 million *Streptococcus lanceolatus* and 25 million *Streptococcus pyogenes*, though in a few the dose was increased to 125 million *Streptococcus lanceolatus* and 33 million *Streptococcus pyogenes*. No untoward results were experienced from these doses.

Of 36 patients treated with vaccine, 10 died. Of 25 patients untreated with vaccine, 16 died. Of 20 patients treated with Vaccine A alone, 3 died. Of 6 patients treated with Vaccine B alone, 4 died. Of 7 patients treated with Vaccines A and B, 2 died. The good results of the vaccine were seen in an improved general condition rather than in the rapid subsidence of any special symptoms.

3. Incubation Period of Influenza.—Citing their own cases, the authors claim that the incubation period for both was forty-one hours.

Lancet, London

Nov. 2, 1918, **2**, No. 18

4 Spirochetosis Icterohemorrhagica. B. Dawson.—p. 575.
5 Doctrine of Consumption in Harvey's Time and Today. P. Kidd. —p. 582.
6 *Pyemia Due to Organisms of B. Coli Group. J. I. Enright and P. H. Bahr.—p. 585.
7 Small Localized Epidemic of Influenza in Hospital Ward. M. G. Foster and H. A. Cookson.—p. 588.

6. Pyemia Due to Organisms of B. Coli Group.—Cases of a pecular pyemia, with special involvement of the kidneys, apparently caused by *B. coli* or one of its congeners, have been observed during the last year in Cairo. It was some time before the puzzling pyrexia with its attendant symptoms was recognized as a specific one. Nine cases in all were diagnosed in life, six others were recognized pathologically postmortem. In all but three of the cases which came to necropsy a dysenteric ulceration of the large intestine, and especially of the rectum, was present in all degrees of superficial necrosis and deep ulceration. Out of the six patients under treatment, three gave no history of a chronic diarrhea or dysentery; the remainder had had many such attacks.

The authors surmise that the organisms originally gained entrance to the blood stream through a breach of the mucosal surface in the lower part of the large intestine. The pyemic attack is usually ushered in by severe frontal headache, anorexia, vomiting, and an acute pain localized to one or both kidney regions. This pain radiates along the inguinal canal and terminates in the penis, or may be localized to the scrotum. Blood is often passed in the urine in the initial stages. There is generally some difficulty in micturition, though there may be at the same time no frequency or alteration in amount of urine. There may be no symptoms of vesical trouble whatsoever. Usually the patient looks extremely ill, and is mentally dull; he sweats profusely. The temperature is invariably high (103-104 F.), the pulse weak and rapid (110 or higher). At the outset there is invariably a severe rigor which lasts about ten minutes. The temperature remains elevated for five days and then takes on an undulating and a remittent character. All the urgent symptoms disappear; after a few days of convalescence the patient is able to resume his duties.

After a further seven to fourteen days the temperature suddenly shoots up and is followed by a rigor and vomiting; the former succession of symptoms is repeated seriatim. These relapses, averaging five days, alternating with apyrexial periods of eight to fourteen days, recur with remarkable regularity. The patient grows weaker and progressively more emaciated. Finally he dies of toxemia, it may be with ascites and a profuse diarrhea with fecal incontinence. At this stage the liver and spleen are definitely enlarged.

In cases which progress favorably under treatment the pyrexial cycles continue but diminish in intensity, and the apyrexial periods become gradually more prolonged, as long as five weeks. Such patients rapidly put on flesh, and after a convalescence of three months, during which there is no elevation of temperature, were discharged from hospital. Among diseases most closely resembling it are malaria, undulant and relapsing fevers. In its early stages dysentery, generalized tuberculosis, phlebotomus fever, or one of the enteric group may be suspected.

Practitioner, London

November, 1918, **101**, No. 5

8 Symptoms Which Precede and are Associated with General Arteriosclerosis. O. K. Williamson.—p. 241.
9 Clinical Value of Minimum Blood-Pressure Records. L. T. Thorne.—p. 260.
10 *Relation of Blood-Pressure to Psycho-Neuroses. P. Bousfield.—p. 266.
11 *National Medical Service. W. A. Brend.—p. 271.
12 Recent Work of Anesthetics. J. Blomfield.—p. 279.
13 Scurvy (Concluded). H. V. O'Shea.—p. 283.
14 *Ergot and the Prostate. O. Y. Murphy.—p. 291.
15 Pseudo-Acute Abdomen with Temporary Increase of Arterial Tension. W. B. Cosens.—p. 293.

10. **Blood Pressure and Psychoneuroses.**—Observation has convinced Bousfield that the blood pressure is not only of some value in the differential diagnosis of the psychoneuroses, but that it is also of considerable importance in their treatment. In a pure neurasthenia, unless complicated by organic disease, the blood pressure is usually subnormal. In a conversion hysteria, it is generally normal; in an anxiety-neurosis, it is more often than not considerably above the normal. Bousfield believes that the headache in the anxiety neurosis is caused very often or exaggerated by the slight raising of the blood pressure. By lowering the blood pressure, and thus relieving one of the most distressful symptoms, improvement of the general condition by psychotherapeutic methods takes place more rapidly.

In instances in which a patient can only be seen for about one hour during the week, Bousfield nearly always gives one one-hundredth grain of nitroglycerin nightly for a week, followed, perhaps, by half that dose during the next week. In neurasthenia, improvement follows raising the blood pressure. In such patients, and this seems of some slight value, courses of treatment were either suggestive or psycho-analytic. An interesting fact elucidated by Bousfield during his investigation was that those who suffered from great sweating were, as a rule, those in whom the blood pressure was not relieved so readily by nitroglycerin.

11. **National Medical Service.**—The various schemes for national medical service proposed by different English medical men are criticized by Brend in an analytical way. He says that the general point which it is sought to make is that, owing to the great variety and conditions from locality to locality, anything in the nature of a centralized uniform medical service is impracticable. It is impossible to conceive of satisfactory results following from a service which lays down the same requirements for a rural district and a crowded industrial area. An essential qualification for success is a wide degree of elasticity in accordance with local circumstances. It is submitted, therefore, that the best prospects of increasing the usefulness of the general practitioner to the community will be afforded by dismissing the idea of a national medical service, and considering instead the idea of local medical services, which shall vary according to the needs and type of each locality.

In order that this scheme might be realized, it would be necessary in every district to establish a local authority on which the practitioners of the district would be represented widely. This need not necessarily be a new authority; it might, for example, be simply a subcommittee of the present sanitary authority, to which practitioners were added. But it should be understood that the doctors were not members of this authority simply for the purpose of protecting their own interests but were to be regarded as actually responsible, along with the rest of the committee, in establishing an adequate medical service in their district. The authorities then have an entirely free hand to survey its needs and provide for them accordingly. In some districts, as already pointed out, the practitioners would probably concur in a whole-time salaried service being formed; in others, it would be realized that the great bulk of the work was already done by private practice and there was no need to interfere with this, but that it was necessary to supplement it in various directions. Again there would be freedom to make the additional provision either by the appointment of a certain number of whole-time men or of part-time men, or by payment of private practitioners by a capitation fee.

Whatever scheme is adopted, the consequent legislative changes will be very extensive; and in a position where any course is fraught with difficulties, and where weighty arguments can be brought forward against any proposal, it is Brend's opinion that the minimum of difficulty and the best prospect of success will be attained by permitting a very high degree of local autonomy in this matter.

The war undoubtedly has raised the status of the doctor. It has now been made clear to all that the medical profession must be regarded as an integral part of the national defense against aggression by foreign foe. Professional men of all types—lawyers, merchants, architects, teachers—have all worthily contributed their share as men; the padre and the doctor alone have been called on to play their parts still in their professional capacities. Nor is this change limited to increased recognition of his importance; the actual value of the doctor as a curer of sickness has been substantially increased. Where formerly it may have been that his weekly medical journals accumulated unopened in his consulting room; now, at the mess, in hospital, or in the field, he has been associated with his colleagues, some perhaps high up in the scale of medical eminence, and he has had opportunities of hearing all forms of treatment discussed and has seen new developments of medicine put into practical application. There must be very few men who have not realized that, purely from the point of view of adding to their medical knowledge, they have benefited substantially by their experience in the army medical corps.

14. **Ergot and the Prostate.**—In two cases of enlargement of the prostate reported by Murphy, one a senile enlargement and the other a traumatic inflammation in a young adult, the administration of ergot apparently reduced the obstruction caused by the enlarged prostates. Murphy urges the more frequent use of ergot in these cases. He gives 1 dram every four hours.

Sei-I-Kwai Medical Journal

Sept. 10, 1918, **37**, No. 9

16 Content of Fatty Acids and Cholesterin in Brain. T. Nagayama.—p. 35.
17 Study of Ferment's Trypsin. Y. Masai.—p. 36.

Archives de Médecine des Enfants, Paris

November, 1918, **21**, No. 11

18 *Endocrine Glands and the Bones. V. Hutinel.—p. 561. Cont'n.
19 Mongolian Blue Spot in Brazil. C. Ferreira.—p. 600.
20 *Pancreatic Infantilism. J. Comby.—p. 602.

18. **The Endocrine Glands and the Bones.**—In this instalment of this general review of the pathology of childhood, Hutinel discusses what is known to date of the synergy of the ductless glands, the pluriglandular syndromes, and the malformation of bones and other tissues under the influence of abnormal endocrine functioning: athrepsia and hypotrophy in young infants, and rachitis, the lymphatic state and anemia in older children. These are all dystrophies. The organization of the cellular elements is sluggish and stops before reaching its normal consummation. The elements persist in the intermediate stage and are neither cartilage nor bone. Rachitis in syphilitics is rachitis the same as in other conditions, but as it affects an already sensitized bone, the damage is greater.

20. **Pancreatic Infantilism.**—Comby compares what Byrom Bramwell and others have written on this subject, with a recent communication by Bullrich. (Summarized in THE JOURNAL, Sept. 28, 1918, p. 1098.) Bullrich's case seemed to be a typical example of pancreatic insufficiency, but necropsy disclosed that others of the endocrine glands were involved in the clinical picture far more than the pancreas. Pancreas treatment would have had little chance to benefit the patient in such a case. Comby queries whether there are two different syndromes with the same symptomatology, or whether the same affection might in different cases affect merely the pancreas or invade others of the ductless glands.

Bulletin de l'Académie de Médecine, Paris

Oct. 1, 1918, **80**, No. 39

21 *The 1918 Epidemic of Influenza. A. Netter.—p. 275.
22 *Errors in Diagnosis of Influenza. R. Wurtz and F. Bezançon.—p. 286.

23 *Influenzal Pulmonary Edema. P. Ravaut.—p. 290.
24 Whole Cinchona in Treatment of Influenza. R. Dubois.—p. 291.
25 The Arterial Pressure in Addison's Disease. R. Porak.—p. 293.

Oct. 15, 1918, **80,** No. 41

26 International Scientific Relations Committee Report.—p. 317.
27 Prophylaxis of Influenza. Committee Report.—p. 317.
28 *Prophylaxis of Contagious Diseases. H. Vincent and Lochon. —p. 348.
29 Compulsory Notification of Tuberculosis. M. Pamard.—p. 358.
30 Saccharomyces Dermatitis. H. Hudelo and others.—p. 360.

21 to 23. See Paris Letter, p. 1596.

28. **Prophylaxis of Influenza.**—Vincent reports favorable experiences with masks, and comments on the relative immunity of infants to influenza. In the discussion that followed, Henrot recalled that he had urged in 1874 the general adoption of a protecting mask he had devised for diphtheria and malaria. It was put on and worn like spectacles. His proposal and device were pooh-poohed at the time, although he cited favorable experiences reported by Tyndal in an epidemic in Lancashire after the wearing of masks had been made compulsory. Henrot and his pupils found the masks useful at certain necropsies, and they have been using them thus for forty-four years.

Bulletins de la Société Médicale des Hôpitaux, Paris

July 26, 1918, **42,** No. 27

31 Tuberculosis in Professions in Greece. P. Rondopoulo.—p. 807.
32 Facial Diplegia after Lethargic Encephalitis. Sainton.—p. 808.
33 Peduncular Sequels of Lethargic Encephalitis. Lortat-Jacob and G. L. Hallez.—p. 811.
34 *Cauterization plus Occlusion for Lupus. F. Balzer.—p. 814.
35 Heart Disease and Fitness for Service. Gouget.—p. 826.
36 *Echinococcus Cyst of Liver without Gallstones. Gouget.—p. 831.
37 *Spirochete Jaundice and Sclerous Nephritis. A. Pissavy.—p. 835.
38 Tuberculous Lacrimal Gland and Lid. Achard and Leblanc. —p. 838.
39 *Retention in Acute Diseases. C. Achard and A. Leblanc.—p. 845.
40 *Spirocheturia and War Nephritis. Salomon and Neveu.—p. 852.
41 *Meningitis in 1918. P. Nobécourt and C. Richet, Jr.—p. 858.
42 Chest Complications of Malignant Granuloma. M. Favre.—p. 864.
43 Case of Typhoid plus Paratyphoid B. G. Etienne.—p. 866.
44 Pneumonia Preceded by Pneumococcus Septicemia. P. P. Lévy and J. de Léobardy.—p. 871.
45 *Transfusion of Blood in Meningococcemia. L. Ribadeau-Dumas and E. Brissaud.—p. 875.
46 *Nephritis, Aortitis and Gangrene in Early Syphilis. C. Laubry and L. Marre.—p. 882.
47 Ingestion of Gelose Gelatin to Form Protecting Coating for Stomach. F. Ramond, Robert and A. Petit.—p. 886.
48 Transient Lethargy with Azoturia and Azotemia. E. May.—p. 888.

34. **Treatment of Lupus.**—Balzer reports some typical cases to show the benefit which may be realized by application of silver nitrate, zinc or chromic acid to the lesions of tuberculous lupus, protecting them afterward against secondary infection by an occlusive dressing. This also serves to reduce the virulence of the microbes already in the lesion.

36. **Echinococcus Cysts in Liver Simulating Gallstone Mischief.**—The woman of 50 related that she had expelled some gallstones the year before, and, naturally, the jaundice, pains and obstruction of bile were ascribed to cholelithiasis. The liver fissured during the operation and a purulent fluid escaped, but no gallstones were found. The patient succumbed the same day. The diagnosis had wavered between gallstones and a neoplasm; Gouget had been impressed with the abrupt onset of symptoms and the extreme prostration accompanying the pyretic jaundice by the second week. Evidently a fixation test for echinococcus would have given the clue, but this would not be applied in such a case unless every case of cholelithiasis were systematically subjected to it. The liver and bile passages were honeycombed with pus, and a large echinococcus cyst was found in the upper part of the liver, the farthest removed from the biliary passages. Hydatid fragments were found in the common bile duct, and had evidently been responsible for the colics, but the jaundice was probably the consequence of the parenchymatous hepatitis. Accumulating experience has shown the rarity of direct compression as the cause of the obstruction in such cases.

37. **Sclerous Nephritis with Spirochete Jaundice.**—The evidently recent development of the sclerous nephritis, with other features of the case reported, seem to sustain the assumption that the kidney changes were the direct result of the spirochetosis itself. The reason why such changes have not been observed more often with spirochetosis is probably that the latter does not prove fatal at the time. When the kidney disease is observed a few months later, no one thinks of connecting it with the spirochetosis. In the present case the man succumbed to an intercurrent bowel disease, so the spirochetosis damage was discovered at the moment.

39. **Retention in Acute Diseases.**—Achard and Leblanc have applied various methods of exploration of kidney functioning in acute diseases in the last few years, and tabulate the findings in twenty-three cases, mostly of typhoid and pneumonia. The retention of water, urea and chlorids may be due to an acute complicating infectious nephritis but, as a rule, the urine shows a high urea content, up to 40 per thousand or over, in some cases, and the kidneys seem normally permeable. The excessively high urea content of the blood is due merely to the oliguria, and possibly to the disassimilation of nitrogen; this is rendered probable by the contrast in some cases between the high figure of the azotemia (2.78 and 1.86 in two cases) and the high urea output (15.7 and 23.2 in these two cases). As the crisis passes and convalescence is installed, a phase of excessive activity on the part of the kidneys follows. This seems to be a general phenomenon, but its intensity varies from moment to moment, and it may be brief or may persist a long time. Whenever it occurs, there are always indications of a disturbance in the balance of the fluids of the organism: The organism is in a state of crisis, usually secondary to a state of more or less pronounced retention. During this phase, Ambard's ureosecretory constant may be much modified temporarily. Under Widal's influence, the rôle of the kidneys in retention of salt has been regarded as predominant, but Achard and Leblanc insist that to date no conclusive proof has been offered that the state of retention is due to functional insufficiency of the kidneys—a specific impermeability for sodium chlorid. This assumption is merely an attempt to explain the facts observed, and it often does not conform to them. It is actually paradoxical to admit the coexistence of a secretory disturbance of this kind along with a perfectly normal concentrating power on the part of the kidneys. It is far more probable that certain factors acting in the inmost depths of the tissues play an important part in the metabolism of water. The researches of Mayer and Schaeffer on the lipocytic coefficients of the organs seem to throw new light on the question of the capacity of the organism for hydratation, as they reported in the *Journal de physiologie et de pathologie générales,* May, 1913, and January, 1914.

40. **Spirocheturia and War Nephritis.**—Salomon and Neveu have systematically examined the urine for spirochetes in every case of acute nephritis since August, 1916. They found spirochetes in eleven cases of war nephritis with a tendency to edema, but none could be detected in fourteen otherwise similar cases. The spirochetes resembled those of the icterohemorrhagic type but were a little longer, thinner and with more twists. They were found only on repeated examinations, and did not seem to be pathogenic for guinea-pigs.

41. **Meningitis in the Army.**—Among the twenty-eight cases of meningitis observed between last December and May, 1918, several different strains of meningococci were involved, even in the same focus. The mortality was over 56 per cent. The disease had subsided entirely for six months before last December. Then the cases developed at scattered points, and American soldiers were most numerously affected. Infection with the meningococcus B seems to be particularly virulent, and a polyvalent serum has little effect on it.

45. **Transfusion of Blood in Treatment of Meningococcemia.**—The young soldier's meningococcemia seemed to develop in a series of cycles of allergy of four or five days' duration each, with chills and high fever, eruption and diarrhea, with a brief interval of relief between the cycles. There was a phase of meningitis at one time but it was transient, and the cyclic course was not modified. Each cycle left the patient more debilitated. Serotherapy brought an anaphylactic shock when given by the vein after failure of intraspinal administration. Vaccine therapy and a fixation abscess failed likewise.

Finally, 50 c.c. of citrated blood from a healthy man were infused and the general condition improved at once. The following three days, 20, 10 and 20 c.c. were transfused and the improvement continued, no meningococci being found in the blood. Suspension for two days was followed by return of fever, and no benefit from transfusion of 40 c.c. of blood the fifth day, but 20 c.c. the seventh day brought great improvement, and it continued under repeated transfusion of 20 c.c. of blood the sixth, eighth, ninth, twentieth and twenty-first days, always in the morning. Two weeks later the patient had gained 11 pounds; the reds increased from 2,140,000 to 3,900,000 under the influence of the transfusions. In less than six weeks from the first one, the man left the hospital completely cured. He might have recovered without the transfusion, but it would have been a much slower process and there might have been complications which he escaped by this means. When the transfusion was done at evening, it displayed no beneficial action, but in the morning it warded off the chills, etc. There was no specific action, as the donor had never had meningococcus infection, but it seemed to prevent the development of the anaphylactic phenomena caused by the presence of the meningococci in the blood. The alexin in the blood always showed an increase after the transfusion.

46. **Syphilitic Nephritis and Gangrene.**—The nephritis developed in the man of 43 one year after the primary chancre which had been given thorough specific treatment. The nephritis required hospital treatment, and the albuminuria was brought down from 12, 16 or 18 gm. to 5 or 6, when suddenly symptoms of aortitis became manifest, both thoracic and abdominal. The abdominal aortitis simulated acute appendicitis at first, but the circulation in the legs became defective, with embolism and patches of dry gangrene compelling amputation of one leg. After this, under arsphenamin treatment the man regained his health and earning capacity. The syphilis in this case must have been of a peculiarly malignant type. On account of the aggravation of the nephritis symptoms under the first injections of mercury, the mercury was suspended as the patient seemed to be doing sufficiently well under dieting and repose. But this proved to be a grave mistake, as otherwise the aortitis might have been warded off. Syphilitic nephritis should be given thorough treatment, regardless of transient exacerbation under it. In another case, the nephritis, with 30 gm. of albumin, was finally cured after a number of dramatic fluctuations, by prolonged mercurial and iodid treatment. In the case reported the final recovery was realized only under large doses of arsenobenzol kept up for eighteen months, regardless of the transient exacerbations immediately after each injection.

Paris Médical

Sept. 21, 1918, **8**, No. 38

49 *Ether Dressings. P. Descomps and A. Richard.—p. 229.
50 Suprarenalitis after Dinitrophenol Poisoning. P. Merklen and Malloizel.—p. 233.
51 *Echinococcus Chyluria. P. Remlinger.—p. 235.
52 Acute Nephritis with Scabies. G. Milian.—p. 237.

49. **Ether Dressing.**—Descomps and Richard say that irrigation of wounds with ether has proved its usefulness to such an extent that it seems destined to survive the war as a simple, convenient and effectual complement to dry asepsis. Especially in rural practice, where infrequent changes of dressings must be the rule, it will have a wide field of usefulness, they think. The fats and certain alkaloids in the wound are dissolved by the ether and are drawn up and out of the wound by the capillary attraction of the dressing, so that they no longer are absorbed by the organism or serve as a culture medium for the microbes. The ether also destroys the red corpuscles in the wounds, which leaves the phagocytes free to conquer the microbes. Its principal action therefore is in promoting the autosterilization of wounds, so that it may be regarded as a dressing which supplements the simple, fundamental dry dressing of the aseptic technic. The inflamed region is covered with two or three layers of gauze and this is moistened with the ether three times a day. Above this is a sheet of impermeable tissue and a thick pad of carded cotton. The whole is fastened with gauze, loose in the center and tight around the edges. The ether is renewed through a rubber tube or tubes left for the purpose under the dressing or by working a tube in each time. They use from 10 to 40 c.c. of fresh ether each time. The patient feels a sensation of cold when the ether reaches the tissues. The outer end of the tube is kinked to retard evaporation. The ether diffuses all through the wound which is a great advantage over hypochlorite solutions, which are distributed only by gravity. The ether dressing being practically a dry dressing is free from the disadvantages of a fluid. But the chief usefulness of the ether is in preparing a wound for primary suture. Nothing else can approach it for this, they say.

51. **Echinococcus Chyluria.**—Remlinger reports the cases of a man and of a woman who eliminated in the urine the membranes and vesicles from an echinococcus cyst above the bladder. No operation was attempted in either case and the general condition has kept fair to date. The chyluria was probably due to compression in both cases. It had existed long before there was anything to suggest echinococcus disease.

Presse Médicale, Paris

Sept. 19, 1918, **26**, No. 52

53 *Syphilitic Peritonitis. M. Letulle.—p. 477.
54 *Dead Bone in Cases of Fractures. R. Leriche and Policard.—p. 479.
55 *Infantile Scurvy. J. Comby.—p. 480.

Oct. 3, 1918, **26**, No. 55

56 *Elimination of Spirochetes in Urine. Garnier and Reilly.—p. 505.
57 Microbian Flora of Influenza. Orticoni, Barbie and Leclerc.—p. 508.
58 *Convergence of Eyeballs After Shell Concussion. P. Descomps, J. Euzière and P. Merle.—p. 509.

53. **Syphilitic Peritonitis.**—Letulle insists that syphilis attacks the peritoneum much oftener than is generally recognized. He found a positive Wassermann reaction in seventy-four of 154 cases of cirrhosis of the liver, and treatment as for syphilis cured the peritonitis in many of these. This syphilitic peritonitis is largely responsible for the ascites, and as it is curable, this element in the clinical picture can be eliminated. Every case of cirrhosis with ascites should be suspected of syphilis, even when there is a known history of alcoholism or tuberculosis. It follows logically that every case of cirrhosis of the liver should be given systematic and prolonged antisyphilis treatment. No harm will be done in any event, while great benefit may result in case syphilis has any share in the clinical condition. Letulle urges microscopic study of the peritoneum in syphilitics, and gives seven illustrations of different histologic findings liable to be encountered.

54. **Dead Bone with Fracture.**—Leriche and Policard report the results of research which demonstrate that the white denuded bone in a war wound is actually dead, and as much a foreign body as an engrafted segment of bone. It has the advantage over the latter, however, that it is in intimate anatomic connection with live bone, and the process of repair proceeds smoothly through the haversian canals. If these canals are obstructed—and this is the rule when there has been an infectious process at the spot—normal repair is hampered. The microscope thus confirms the clinical experience that an aseptic evolution of the wound in the soft parts is the best guarantee of correct and rapid healing of the fracture.

55. **Infantile Scurvy.**—Comby reiterates that every infant given a sterilized food, either milk or proprietary foods, for several months, without any fresh or living food, is menaced with scurvy. In the fifty-five cases he has encountered, in over forty-five an erroneous diagnosis had been made and the children had been given sodium salicylate for the assumed rheumatism, or they had been treated with electricity and massage for the supposed acute poliomyelitis, or given mercurial treatment for assumed syphilis, or incisions and trephining had been done for supposed acute osteomyelitis. Some had been put in a plaster cast or trough for coxalgia or Pott's disease. In the last few months he has encountered thirteen new cases, and in 90 per cent. the attending physician had failed to recognize the scurvy. One infant recently had been treated for six weeks for rheumatism and then for acute

poliomyelitis, no one heeding the one-sided diet. Comby ordered the child to be left quiet in its cradle, not bathing nor dressing it, nor moving it abruptly in any way. A teaspoonful of grape juice was given twice a day, and fresh milk, boiled, was given instead of condensed milk. In eight days recovery was complete. The children with scurvy are generally between 6 and 18 months old, and the painful pseudoparalysis of the legs is a prominent symptom.

56. **Spirocheturia in Spirochete Jaundice.**—The pathogenic spirochetes are not found in the urine as a rule until between the fifteenth to the twenty-third day of the disease, and they are not regularly present even then.

58. **Convergence of Eyeballs After Shell Concussion.**—This sign of organic injury from shell concussion occurs during equilibration tests. Descomps and his co-workers report ten cases, and they regard it as an indication of some minute focal brain lesion.

Correspondenz-Blatt für Schweizer Aerzte, Basel

Oct. 12, 1918, **48**, No. 41

59 *Charcoal in Chronic Intestinal Disease. E. Lenz.—p. 1361.
60 Prophylaxis of Influenza. A. Hotz.—p. 1372.
61 Experiences with Influenza in Civilian and Military Circles. H. R. Schinz.—p. 1374. Conc'n.

Oct. 19, 1918, **48**, No. 42

62 *Treatment of Severe Influenza with Convalescents' Serum. E. Liebmann.—p. 1393.
63 *Viscosimetry and the Blood Corpuscles. A. Alder.—p. 1405.

59. **Charcoal in Chronic Intestinal Disease.**—Lenz has been giving animal charcoal systematically in cases of chronic disease of the small intestine and other conditions in which absorption of bacterial and other products was poisoning the system. The charcoal is given as far as possible from the meals, and in the smallest amounts that prove effectual, in order to refrain from interfering with the digestive juices. From one to three heaping teaspoonfuls of the charcoal (from 5 to 10 gm.) are taken on retiring, stirred well into a glass of hot water or chamomile, linden flower or valerian tea. In acute phases, up to 20 gm. can be taken. In acute diarrheic conditions during the war, from 80 to 100 gm. were sometimes taken daily. The prolonged treatment with small doses is kept up for a few weeks after tolerance for a more normal diet has been regained. In cases of chronic putrefaction and fermentation dyspepsia and catarrhal conditions in the small intestine, he keeps up this continuous mild charcoal treatment for years, with occasional suspension. When the charcoal tends to induce constipation, he orders an occasional course of alkaline saline mineral waters, a glass cold or hot on rising. This clears out the charcoal from the digestive tract so that the processes of digestion can proceed unhampered.

He has never witnessed any serious by-effects from this prolonged charcoal treatment. Occasionally the charcoal formed lumps in the stools, and there is of course a possibility of anthracosis. Mönch has also recently reported a case in which four days of charcoal treatment were followed by palpitations, rapid pulse and congestion of the face when any alcohol was taken. Lenz witnessed the subsidence of jaundice and of urobilinuria in two cases of gallbladder disease under the influence of the charcoal. The latter seems to spare the liver by binding the toxins in the bowel so the liver is spared the task of detoxicating them. Lichtwitz has reported brilliant success in treatment of pernicious anemia with charcoal, long continued and supplemented with frequent lavage of the stomach. This treatment is based on the assumption of gastro-intestinal autointoxication as the cause of pernicious anemia. This assumption is sustained further by Seyderhelm's discovery that pernicious anemia in horses is caused by the presence of gastrophilus larvae in the stomach.

62. **Serotherapy of Influenza.**—Liebmann reports from the medical clinic at Zurich, in charge of Eichhorst, twenty-three cases of severe pneumonia in influenza in which systematic treatment was applied with convalescent's serum injected subcutaneously or into a muscle. The clinical verdict is favorable although beneficial action was not apparent in every case. The refractory ones were all far advanced, some with septicemic phenomena, evidently from mixed infection. In the other cases, after injection once or twice of 20 or 30 c.c. of convalescent's serum, the pneumonia, pronounced cyanosis and hemorrhagic sputum rapidly subsided and the threatening general condition promptly improved. Other patients with apparently lighter attacks were much longer in recovering than in those cases. In some instances the fever subsided rapidly although the cyanosis and delirium persisted for some time. Extreme caution is necessary to ensure that the serum to be injected is sterile; in one case streptococci were found in the blood on a second examination when it had been apparently sterile at the first examination. He insists that prudence requires three days' control of the cultures from the blood and overinoculation on agar. The serotherapy seems to have an antitoxic action rather than a bactericidal, as it did not ward off recurrences.

63. **Viscosimetric Determination of Volume of Blood Corpuscles.**—Alder shows how the viscosimeter is able to determine the volume of the blood corpuscles, the average size of the separate cells, and the concentration of the hemoglobin in the red corpuscles. His research has shown a most remarkable tenacity in the hemoglobin content of each cell. A given volume of corpuscles can thus be carrier of only a certain amount of hemoglobin. This physiologic property of each cell to always carry the maximum quota of hemoglobin seems to be constant through all pathologic conditions, and he regards it as extremely important from several points of view. The only way by which the organism is able to expose larger amounts of hemoglobin to oxidation in the lungs, is by increasing the numbers of red corpuscles. Even in pernicious anemia, the high color index is due merely to the fact that the cells are larger than normal. There is no appreciable disturbance in chlorosis, etc., until the hemoglobin content falls below the normal figure. Over 99 per cent. of the bulk of the corpuscles is formed of the reds. He took up the plasma in a pipet after the blood had been treated with herudin, and used the plasma to dilute a similar amount of the same blood. By comparison of the specimens then, the volume and the viscosity could be estimated, a system of parallel coordinates allowing the third quantity to be ascertained from the two known quantities. The findings coincide with those of the refractometer and other tests. The average of extensive researches by the different methods shows that the normal proportional bulk of the blood corpuscles is between 42 and 46 per cent., and the bulk of a single red corpuscle averages 88 cubic microns in normal conditions. The range in disease is wide, from 66 cubic microns in chlorosis to 119 and 165 in pernicious anemia. In hemolytic anemia the corpuscles were within the normal range.

Gazzetta degli Ospedali e delle Cliniche, Milan

August 11, 1918, **39**, No. 64

64 Mutilations of the Face: Necessity for Centralizing Measures for Reconstruction. A. Maggioni.—p. 621.
65 *Immediate Operation for Skull Wounds. A. de Castro.—p. 624.

August 15, 1918, **39**, No. 65

66 Calcium Sulphate in Therapeutics. C. Tosatti.—p. 634.
67 Varices of Subcutaneous Abdominal Veins. E. Greggio.—p. 636.

65. **Skull Wounds.**—De Castro reiterates that no matter how apparently insignificant a war wound of the skull, operative measures are imperative without delay. The skull wound should be cleared out acording to the same principles as for any wound elsewhere. Titrated solution of calcium hypochlorite solution has proved extremely effectual for this in his experience. He makes a practice of exploring the wound with the finger, using a Kocher forceps guided by the finger to extract any foreign bodies. If a bullet cannot be readily found, he leaves it for a later intervention.

Pediatria, Naples

October, 1918, **26**, No. 10

68 *Asthma in Children. L. M. Spolverini.—p. 569.
69 *Treatment of Chorea. R. Pastore.—p 577.

68. **Asthma in Children.**—Spolverini is inclined to ascribe the tendency to asthma in children to deficient functioning on the part of the sympathetic system innervating the smaller bronchi. This paresis of these nerves allows the vagus nerve

to have predominant control, so that the outcome is practically vagotony, although in reality the vagus is normal. This assumption is sustained by the favorable action of epinephrin in asthma, as this does not paralyze the vagus but merely stimulates its sympathetic antagonist. In his experience with nineteen cases of recurring asthma in children, from 6 months to 10 years old, he was impressed with the constant lymphatic status in all, as also the extremely irritable condition of the nerve terminals, both in the motor and vegetative innervation, and also the nervousness and uricacidemia noted almost constantly in one or both parents. He was further impressed with the benefit under suprarenal treatment, even outside of the attacks of asthma, and also under treatment with iodin and calcium preparations and mineral waters of the Fiuggi and Montecatini types. These children, more than any others, benefit from a return to nature. During the attacks of asthma, 1.5 gm. calcium bromid proved a valuable adjuvant to epinephrin. He gave both by the mouth, not venturing to give the epinephrin by the vein to children. The loss of normal balance in the endocrine system, which seems to be responsible for this asthma-producing neurosis, might be instructively studied on children, especially the assumed hyperproduction of hormones from the lymphatic glands, and the deficient suprarenal functioning.

69. **Magnesium Sulphate in Treatment of Chorea.**—Pastore reviews the literature on the treatment of chronic chorea by intraspinal injection of magnesium sulphate according to Marinesco's technic. Excellent results have been reported by a few but in Caronia's case there were extremely severe by-effects, the child collapsing at once after the injection, with paralysis of all the muscles and unconsciousness, respiration becoming rare, with pauses, and only the heart beat showing signs of life, the temperature dropping to 35 C. Artificial respiration was kept up systematically for about twenty-four hours, with continuous inhalation of oxygen, and the child recovered. There were no further manifestations of the chorea from immediately after the injection. Pastore here reports four cases in which the magnesium sulphate was given in small repeated doses, thus curing the chorea without danger. She made from five to seven intraspinal injections of from 0.1 to 0.2 gm. of magnesium sulphate in a 25 per cent. solution, to a total of 0.4 or 0.5 gm. The intervals were one or two days at first, and three or seven days toward the last. There was no appreciable reaction, and improvement was pronounced after the third injection in one child; after the sixth or seventh in two others. One child was not completely cured, although notably improved by the treatment. In this girl of 11, the third injection was followed for two days by intense headache, superficial respiration and sluggish pupil reactions, and the choreic movements returned, but improvement was pronounced under two more injections of the sulphate.

Riforma Medica, Naples

Sept. 21, 1918, **34**, No. 38

70 *Plastic Motor Surgery. A. Pellegrini.—p. 746.
71 Typhoid and Paratyphoid Occurring in the Vaccinated. V. Panto.—p. 749.

70. **Motor Control of Artificial Limbs.**—Pellegrini reports the details of four cases in which he remodeled the amputation stump to permit volitional kinetic control of the prosthesis. He also describes one case in which the amputation was done with a special technic for this purpose. A different method was followed in each case, as is described with illustrations, but all were comparatively simple and easy. His experience to date has been more favorable with the extra-terminal loop, but each stump has to be considered separately.

Rivista di Clinica Pediatrica, Florence

July, 1918, **16**, No. 7

72 *Pituitary Insufficiency. M. Pincherle.—p. 337. Concluded.

September, 1918, **16**, No. 9

73 The Population After the War. D. Pacchioni.—p. 449.
74 Growth and Pathology of Twins. A. Borrino.—p. 474. Concluded in No. 10, p. 521.

72. **Pituitary Insufficiency.**—Pincherle gives seven pages of bibliography, and tabulates 116 cases from the literature in which the effect of pituitary treatment was recorded, as also seventeen reports on experimental lesions of the pituitary body. Comparing all this testimony with his own clinical experience amply confirms the connection between abnormal polyuria and backward physical development and pituitary insufficiency. Corroborating minor signs are the effects of pituitary treatment, the extreme tolerance for carbohydrates, the abnormally small sella turcica, anomalies in ossification, and Cushing's thermoreaction, low blood pressure, asthenia and drowsiness. In some of his cases only some of these minor points were evident, and he classifies them as "masked pituitary syndromes." They are important for research on the endocrine system, but the chief importance of their discovery lies in the possibility of improvement and cure under organotherapy. In one of his patients the arrival of puberty was accompanied by considerable development of fat, and menstruation was seriously irregular while some of the sexual characters were abnormal. Pituitary treatment in his cases reduced the excessive diuresis and polydipsia, but did not seem to modify durably the diabetes insipidus. The children increased in height and weight, but not all the signs of backward physical development subsided. Enough were modified, however, to encourage further experiments in this line with great promise. In all his cases albuminuria could be induced by forced lordosis, which indicated a low resisting power on the part of the kidneys.

Annaes Paulistas de Medicina e Cirurgia, S. Paulo

February, 1918, **0**, No. 2

75 *The Amebas Infesting Man. H. Aragão.—p. 25.

75. **Ameba Parasites.**—Aragão discusses the endamebas and their relation to tropical dysentery. The number of cases of the latter has increased constantly in S. Paulo in the last six years, from four to 543 reported cases. He admits only two species parasite in man, the one causing dysentery, and the harmless *E. coli*. Kittens seem to be the best animals for tests with the parasites. The latter can be introduced into the rectum; the encysted forms can be given by the mouth as they are not affected by the gastric juice. The dysenteric symptoms develop in from eight to thirty days. He discusses the features which differentiate the pathogenic from the harmless endameba, especially the small size of the cysts of the former and the small number of nuclei. From one to four is the rule and only exceptionally up to eight, while the cysts of the *E. coli* are about twice as large and have from eight to eighteen nuclei. Persons can be carriers of the dysentery ameba and cysts without ever having had dysentery. The danger from such carriers is obvious. Drugs do not act directly on the encysted forms of the endameba but they check the multiplication of the parasite into these forms. Epinephrin, which Bayma advocates in treatment of amebic disease, acts mainly by keeping down the production of the encysted forms. None of the drugs that act on the *E. histolytica* seem to have the slightest action on the *E. coli*. When there is mixed infection with both, the latter emerges unscathed from the treatment which destroys the histolytica. The latter will keep alive for twenty hours on ice or in feces in a tube of serum or ascitic fluid. They have been kept at room temperature in cool weather for ninety-six hours.

Differentiation is difficult if they are dead, especially when the specimen contains epithelial cells and dead leukocytes. If not dead, motility can sometimes be restored by placing the specimen in the incubator at 37 C. for half an hour or an hour. He recommends for the stain to dilute the 0.5 c.c. of feces in 2 or 3 c.c. of a 0.1 per cent. solution of gentian violet in physiologic solution to which has been added 0.3 per cent. of acetic acid. This keeps the elements of the specimen unaltered for several days. It only exceptionally occurs that the vegetative and the encysted forms are found together. Usually transformation to the encysted form occurs in all the parasites about the same time.

Archivos Latino-Americanos de Pediatria, Buenos Aires

May-June, 1918, **12**, No. 3

76 *Pulmonary Tuberculosis in the Newly Born. M. A. Ugon.—p. 213.
77 *Scurvy in Breast Fed Infant. J. Bonaba.—p. 218.

78 *Streptococcus Septicemia. I. Luisi.—p. 225.
79 Tuberculous Meningitis after Mumps Meningitis. C. Pelfort.—p. 232.
80 *Spasm of Glottis. J. Giampietro.—p. 237.
81 *Tardy Inherited Syphilis of the Liver. A. Casaubon and S. Satanowsky.—p. 243.
82 *Datura Poisoning. C. S. Cometto.—p. 260.
83 Uncontrollable Vomiting in Infants. L. V. Blanco.—p. 267.
84 *Chronic Bronchopneumonia with Recovery. J. P. Garrahan.—p. 272.

76. **Pulmonary Tuberculosis in the Newly Born.**—The two infants described were born a little prematurely and were suckled by their consumptive mothers. One developed signs of pulmonary tuberculosis in a month after birth; the other, not until the third month. Tuberculin tests elicited a positive reaction the fiftieth and the ninetieth days, the responses previously having been negative. Necropsy confirmed the clinical diagnosis.

77. **Scurvy in Breast Fed Infant.**—Bonaba reviews the few cases on record of scurvy in breast fed infants. In the case he reports from his private practice the child was 7 months old and previously healthy, and the parents were healthy also except that the mother was of a nervous temperament.

78. **Empyema from Streptococcus Septicemia.**—The girl of 4 developed the septicemia from an erysipelatous affection of the external genitals. It seemed to spread and involve almost all the organs, with grave toxic symptoms until bilateral empyema developed. This seemed to act like a fixation abscess, with complete recovery after evacuation of the pus and rinsing the pleura with oxygen.

80. **Spasm of the Glottis.**—After forty-nine paroxysms from spasm of the glottis in the first twenty-four hours and thirty-three the next day, the tendency rapidly subsided under a change of diet. The male infant was 5 months old and for two months had been fed irregularly on cow's milk. The prompt improvement and cure followed directly on regulation and change of the diet.

81. **Tardy Syphilis of the Liver.**—The four cases summarized were in children from 7 to 12 years old. One had been given a course of treatment for assumed tuberculous peritonitis as the liver and abdomen were much enlarged and there were frequent attacks of diarrhea and slight fever. Under mercurial treatment conditions promptly returned to normal, and there has been nothing since to suggest a tuberculous process. In two other cases intense pains in the right hypochondrium or attacks of jaundice were cured by mercurial treatment, but the chronically enlarged and knobby liver and spleen did not show much change in the two girls of 11 and 12. The fourth case was in a boy of 11; besides the chronic enlargement of liver and spleen there was a specific bone lesion in one tibia. The course of tardy syphilis of the liver is insidious and chronic, and when definite lesions are installed, they resist the most energetic mercurial treatment as in the last three of the cases described. There was no ascites in any of the children. The chronic liver disease permits long survival in such cases.

82. **Poisoning from Datura.**—The two children had been playing with the fruit of the *chamico*, said to be the popular name for *Datura stramonium*, which explained the delirium, the hallucination of spiders and snakes, the incontinence, extreme dilation of the pupils, convulsions followed by contracture, exaggerated by the slightest touch, and one of the children had a severe eruption suggesting scarlet fever. Both children collapsed when stood on their feet. The bowels were cleared out by injection of a pituitary extract and purgatives, sedatives were given and stimulants, camphorated oil, etc. There was an interval of twenty hours before medical aid reached the children, and the first suspicion from the clinical picture was that the children had rabies.

84. **Chronic Bronchopneumonia.**—Garrahan's patient was a girl of 8 who developed bronchopneumonia in the course of whooping cough. It persisted extremely grave for five months and then subsided completely, without sequels during the two years since. The child required oxygen daily for more than two months, and later in the acute exacerbations. The recurring pains in the spine were relieved by reclining on a hard bed. The vomiting and anorexia hampered nutrition but on milk, soups and lightly alcoholized fluids some strength was regained, and by the second month purées and cooked fruits were given notwithstanding the fever; eggs and fish were added the third month. The final complete recovery shows that the dyspneic, febrile semicachexia in such cases does not necessarily entail an absolutely unfavorable prognosis.

Boletin de la Asociacion Medica de Puerto Rico, San Juan

September, 1918, **14**, No. 120

85 *Prophylaxis of Transmissible Diseases. E. Font.—p. 247.
86 Intravenous Mercurial Treatment of Syphilis. Cabrera.—p. 255.
87 Perforation in Typhoid. F. H. Rivero.—p. 268.

85. **Prophylaxis of Transmissible Diseases in Porto Rico.**—The regulations in Porto Rico compel notification of contagious diseases, not only of the typical cases with certain diagnosis but also those in which the diagnosis is doubtful or the disease so atypical that there is merely suspicion as to its nature. The Public Health Service appointed a permanent commission for the study and investigation of the soil, environment, etc., of the transmissible diseases of all kinds, including those peculiar to the island. The commission is composed of the chief of the Negociado de Enfermedades Transmisibles and his assistant, a pathologist; the chiefs of the chemistry and bacteriology laboratories of the service; the chief sanitary engineer, and an entomologist. Every facility is afforded practitioners for the bacteriologic, chemical and biologic study of each case, and serums and vaccines are supplied free of charge for the indigent. The commission pays special attention to a written or verbal report on unusual cases, making every effort to conduct research that may add to the reputation of the medical corps of the island. Members of the commission go to make investigations on the spot, and have already made valuable contributions to the study of spirochetosis, filariasis, bilharziasis, pellagra, lepra, etc., on persons in quarantine. These investigations have determined, for example, the hitherto unsuspected presence of tropical frambesia in the island, a disease known to be extremely contagious, but which had previously escaped detection and been classed as the superficial lesions of syphilis. The fact that the treatment for the assumed syphilis cured the frambesia, was accepted as the confirmation of the diagnosis.

Brazil Medico, Rio de Janeiro

Aug. 31, 1918, **32**, No. 35

88 Brazilian Gregarinas, 9. C. F. Pinto.—p. 273.
89 *Paralysis of Muscles of Neck. M. Gesteira.—p. 273.

Sept. 7, 1918, **32**, No. 36

90 *The Diagnosis and Prognosis of Heart Disease. O. Clark.—p. 281.

89. **Paralysis of Muscles of Neck.**—Gesteira reports a case of what he calls Figueira's syndrome, the infant of 20 months being unable to hold her head erect. It sagged forward or backward. Lumbar puncture was negative, the cephaloplegia having developed in the midst of apparent health. In another infant it developed soon after diphtheria. The muscles regained normal tone in a few days in both, as also in Figueira's own cases. He ascribes the cephaloplegia to a sporadic atypical poliomyelitis infection, but other infections may be responsible.

90. **Heart Disease in Children.**—Clark emphasizes that medical inspection of schools over several years confirms that pure mitral regurgitation is never fatal if extremely violent physical exercise is avoided. One girl of 9 had strong fremitus and intense murmur during the whole of the diastole, loudest at the base of the heart. The child felt perfectly well and no pathologic antecedents were known. Two years later there was no further trace of the murmur. Clark relates further the case of a man of 71, who at 18 presented signs of mitral insufficiency, but has had no further symptoms from the myocardium during his long life of hard labor since. Physicians sometimes begin to listen to their own heart sounds, and discover a mitral murmur previously ignored and never causing appreciable disturbance. Other instances are related to prove that isolated mitral insufficiency is harmless, so long as exaggerated athletics are avoided. When it induces symptoms, we can be certain that there is concomitant

pericarditis, myocarditis or mitral stenosis. Among 3,000 children he has examined at Rio, he found eleven with severe heart lesions, congenital in three and consecutive to acute rheumatism in eight. In colder countries the average is said to be 12 per thousand, while in Rio, where rheumatism is rare, the average is only 3 per thousand.

Cronica Medico-Quirurgica, Havana

July, 1918, **44**, No. 7

91 Present Status of Leprosy. J. Chabas.—p. 389.
92 Some Medical Aspects of the War. F. M. Fernandez.—p. 413.

Gaceta Medica de Caracas, Venezuela

Aug. 31, 1918, **25**, No. 16

93 *Present Status of Spinal Anesthesia. L. Razetti.—p. 165.
94 Disturbances from Action of Chloroform on the Liver. D. Lobo and others.—p. 169.
95 Flagellate Parasite of Euphorbia Plant. J. Iturbe.—p. 173.

93. **Spinal and Chloroform Anesthesia.**—Razetti marshals the testimony for and against high and low spinal anesthesia. He concludes with an appeal for personal data from the surgeons and anesthetists of Venezuela, asking for reports on personal experiences, mishaps, preferred technic, etc.

Progresos de la Clinica, Madrid

September, 1918, **6**, No. 69

96 Present Status of Malta Fever. G. Pittaluga.—p. 133.
97 Congenital Cystohygroma Below the Ear. A. Perera.—p. 146.
98 *Fractures of Skull other than War Wounds. M. P. de Petinto.—p. 153.
99 *Intraspinal Treatment of General Paralysis. G. R. Lafora.—p. 192.

98. **Fractures of the Skull.**—This extensive article is accompanied by nearly a hundred illustrations, many of them colored, showing among others the cracks produced by a stone weighing 18,765 gm. dropped from a height of about 5 feet on the skull, the cadavers in different positions. Among the other material studied were the necropsy reports of the last eight years in criminal and accident cases. De Petinto's findings confirm that the direction of the fissures can be estimated where the character of the agent dealing the blow and the point of the skull receiving the blow are known. Also that the character of the agent and the site of the blow can be determined from the character of the fracture fissures. He reviews the literature on the subject, including some of the recent war experiences. The fissures always trend toward the opposite and symmetrical point of the skull, fracturing or going around the bone obstacles in their path. The fractures are always direct, but the base of the skull is so much more fragile than the vault of the skull that when the fissure reaches the base it is liable to do much more damage than resulted from the direct impact. The latter may even be overlooked completely. In a hundred skulls examined he found only two in which the primary injury had been at the base of the skull. The above laws apply only to adult skulls; other conditions prevail in the fetal and child skull, as he explains.

99. **Treatment of General Paralysis.**—Lafora declares that he never witnessed such remarkable and such permanent remissions in general paralysis as in cases he has been treating with intraspinal injections of arsphenaminized serum. The rapid clinical improvement was followed more slowly but surely by improvement in the laboratory findings.

Revista Ibero-Americana de Ciencias Medicas, Madrid

August, 1918, **40**, No. 168

100 Fractures and Dislocations of the Elbow. S. G. Hurtado.—p. 82.
101 Clinical Forms of Dilatation of the Stomach. A. Lara.—p. 85.
102 Diagnosis in Ano-Rectal Disease. F. M. Suarez.—p. 113.
103 Status of Treatment of Acute Myocarditis. A. Mut.—p. 125.

Revista Medico-Cirurgica do Brazil, Rio de Janeiro

July, 1918, **26**, No. 7

104 Treatment of Uncinariasis. L. W. Hackett.—p. 299.

Revista Medica Cubana, Havana

July, 1918, **29**, No. 7

105 *Seventy-One Laparotomies. E. R. de Aragon.—p. 351.
106 *Indication with Contracted Pelvis. D. F. Ramos.—p. 354.

105. **Danger of Purgative in Appendicitis.**—The only death in Aragon's seventy-one laparotomies last year was in a case of appendicitis in which a saline purgative had been given the woman behind the attending physician's back. Peritonitis followed, in spite of the prompt operation.

106. **Indications with Contracted Pelvis.**—Ramos declares that the dietetic, medicinal and operative measures introduced in recent years in management of childbirth represent the greatest progress realized in the medical sciences. We now can count on getting the offspring past the absolute or relative stenosis of the superior strait, while leaving the mother in good condition for further pregnancies. The twenty-eight cases he describes show the variety of the indications and the necessity for individualization.

Revista Medica del Uruguay, Montevideo

September, 1918, **21**, No. 9

107 *Autoplastics for Stenosis of the Nose. J. M. Alonzo.—p. 514.
108 Case of Autochthonous Favus. J. B. Foresti.—p. 518.
109 The Juxtavesical Ureter. L. Merola.—p. 521.
110 *Intraspinal Echinococcus Cyst. J. C. M. Fournier.—p. 523.
111 *Pregnancy Toxemia. H. F. Platero.—p. 534.
112 *Ureter Peril in Surgery. C. Stajano.—p. 545.
113 Inaccessible Vesico-vaginal Fistulas. A. Turenne.—p. 568.

107. **Plastic Operation on the Nose.**—The passages had become completely obstructed by cicatricial tissue after the young man had been kicked in the nose by a horse. Alonso bored the passages anew and lined them with skin. The grafts healed in place on one side but proved a failure on the other side, which in time healed. The lumen is less ample on this side and the stenosis displays a tendency to recurrence. But on the skin-lined side, practically normal conditions were restored. The grafts were Thiersch flaps with which a tampon of moist gauze was coated, top and all. The tampon fitted tight into the passage and was unmolested for five or six days. Then the central portion of the gauze tampon was pulled out, and the rest dropped off spontaneously not long after.

110. **Intraspinal Echinococcus Cyst.**—Fournier reports a case of paraplegia in a boy of 12 developing suddenly with no other symptoms except pains in the back for the last two weeks, and a similar attack of pains in the upper dorsal vertebrae for two weeks three years before. The motor disturbances were more an ataxia than paralysis; the spinal fluid seemed to be normal and the Wassermann and tuberculin tests elicited no response, but roentgenoscopy showed a process of rarefaction in the fifth dorsal vertebra and sixth rib, the seat of the pains and of some tenderness. A syphilitic osteitis at this point was assumed, but no benefit was derived from specific treatment, the paraplegia growing constantly worse. A successful operation revealed echinococcus cysts in the muscles close to the fifth and sixth dorsal vertebrae and in the posterior perimeningeal space, in the spinal canal, and also in the subpleural tissue on one side. The process was evidently of two or three years' standing and it had eroded vertebrae and yet had caused no persisting pains or root symptoms while the extreme hypotony of the paraplegia was in marked contrast to the exaggeration of the bone, periosteum and tendon reflexes and the foot clonus.

111. **The Eye Signs in Pregnancy Toxemia.**—Platero regards albuminuric retinitis as such a grave condition that he advises systematic examination of the fundus every twenty-five or thirty days after the sixth month of pregnancy. This is the only means to avoid disagreeable surprises. The albuminuric retinitis is usually accompanied by excessively high blood pressure, and is intimately connected with the auto-intoxication of pregnancy. The prognosis is always grave from the standpoint of vision, although the life is not in danger as with albuminuric retinitis under other conditions. The ophthalmoscopic examination should be supplemented by the determination of the blood pressure and the ureosecretory constant, Ambard's coefficient. Every pregnant woman with albuminuria, he reiterates, is in the grasp of intoxication, and in imminent peril of eclampsia or grave complications, insufficiency of the liver or kidneys, or retinitis. Treatment should aim at detoxication, lowering of the blood pressure and pro-

motion of diuresis. The pregnancy should be interrupted without further delay if vision does not return to normal under five days of medical treatment. He impresses on all pregnant women who consult him the necessity for certain dietetic restrictions, and declares that this spares the women the dangers of autointoxication. His experience has been conclusive in this line. He reports two cases in which the women spurned his dietetic advice and would not believe that their headaches, edema, and other disturbances were traceable to an improper diet, until vision began to be seriously impaired. He stopped all food but gave plenty of water, and purged, and drew 500 c.c. of blood. The urine showed 20 gm. urea, 2 gm. chlorids and 2 gm. albumin. Spontaneous delivery occurred in six days after the urea had dropped to 11.5 gm. and the albumin to traces and all the symptoms subsided. Conditions were graver in the second case, and a still-born fetus was expelled at term. Both women had borne several children and in both, the blood pressure dropped to normal after the venesection.

112. **The Ureter Peril in Gynecologic Surgery.**—Stajano discusses how to avoid injury of the ureters in gynecologic operations, comparing the normal and the pathologic anatomy of the region and especially the course of the ureters near the iliac vessels, the broad ligament and the crossing of the uterine artery, the para-uterine and the terminal segments. The ureter is at the mercy of any lesion developing in the pelvis, displacing or involving it. It is possible to avoid the ordinary dangers of injuring the ureter, but it is impossible to abolish all danger from this source as no one can foresee all the eventualities that may develop from the polymorphous and capricious lesions liable to become installed in the pelvis. He reports four cases of serious injury of the ureter during operations, cutting or ligating it by mistake.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

Sept. 7, 1918, **2**, No. 10

114 Complement Fixation with Trichophytosis. W. L. L. Carol. —p. 784.
115 *Autovisibility of Vessels in Retina. T. Wassenaar.—p. 792.
116 *Thread Test of Gastric Functioning. E. C. Van Leersum.—p. 794.
117 Influenza. L. Vos.—p. 796.
118 *Case of Quinin Poisoning. C. E. Van Der Horst.—p. 798.
119 Mental Disturbances in Influenza. G. F. Wesenhagen.—p. 799.

Sept. 14, 1918, **2**, No. 11

120 Variable Behavior of Different Strains of Cholera Vibrios Toward Blood in Culture Medium. I. Snapper.—p. 848.
121 The Limits of the Visual Field. E. Marx.—p. 858.
122 *Obstetrics in War Time. A. W. Ausems.—p. 863.
123 Early Purulent Pleurisy in Influenza; Resection of Ribs Imperative. V. C. M. Leesberg.—p. 864.
124 Malaria and Quinin Poisoning. A. Nieuwenhuijse.—p. 866.

115. **Autoperception of Retinal Vessels.**—Wassenaar relates that in watching a revolving disk with segments of black and white there comes a time when the impression is perceived of a red or violet background with streams of green color moving across it. The phenomenon is most pronounced when the disk stands in full sunlight and is then moved suddenly into the shade. The retinal vessels then are perceived as darker twisting lines running towards the blind spot, which is distinctly visible. The absence of large vessels in the fovea region is shown anew by these tests.

116. **Thread Test of Gastric Chemistry.**—Van Leersum reports a case in which Einhorn's thread impregnation test permitted the exact localization of a peptic ulcer. Gastro-enterostomy had been done a year and a half before, but the pylorus had not been shut off. The vomiting and the pains, increased by eating and by exercise, and the occult blood in the stools testified to ulceration, although the marked tendency to hysteria had convinced the attending physician that the whole trouble was a gastric neurosis. The Einhorn thread showed a brownish discoloration for a stretch of 2 cm. low on the thread. Immediately below there was an abrupt change in tint to green, showing the action of bile. The assumption therefore was that the new ulcer was in the region of the gastro-enterostomy opening, which roentgenoscopy showed was no longer permeable. This proved to be the case, and after excision of the fistula region with its ulcer, and closure of the pylorus, clinical recovery followed. In a second case this discoloration of the thread between 45 and 50 cm. from the lips, and the abrupt change to green below located the ulcer in the margin of the gastro-enterostomy opening. This patient had already had two operations for gastric ulcer, and refused to permit a third. The thread can be swallowed more readily if a scrap of cracker or meat is tied in the end. There is no need to use the duodenal bucket when the question is merely to locate the bleeding point. The length of the chest, etc., must be taken into account in estimating the location of the tumor from the thread. Einhorn's figures do not give a wide enough range. Van Leersum warns in conclusion that the ease and simplicity of this test commend it to such a degree that there is danger that physicians will use it exclusively and rely too implicitly on its findings. "L'histoire se repète," he says, "and especially in medicine, and this notwithstanding our dearly bought experience teaching us that we should never rely exclusively on any one test, any more than on the anamnesis alone."

118. **Quinin Poisoning.**—Horst describes a case similar to one reported by Nocht in which administration of quinin brought on symptoms like those of blackwater fever, only that the blood did not pass into the urine but there were multiple subcutaneous hemorrhages and bleeding from the gums. This hemorrhagic diathesis returned and subsided parallel to the therapeutic administration of the quinin on three separate occasions, with an interval of two years.

122. **Obstetrics in Wartime.**—Ausems says that he has always preached the advisability of a milk and vegetable diet for pregnant women. This avoids the danger of eclampsia while the fetus does not grow so large as when much meat is eaten. He does not approve of the Prochownick method of dieting as this weakens the woman, while the size of the fetus is not limited by it and labor is not shortened. But the long prevailing war scarcity of meat, fats and sugar has forced women to the simple milk-vegetable diet he has always advocated, and obstetricians are unanimous in extolling its influence on labor. Delivery is brief, and the fetus a little below the average size, but born in good condition by rapid labor. "The uterine contractions were more vigorous and delivery proceeded more rapidly and easily on this compulsory restricted milk-vegetable diet," he reiterates, "than when the women sat by the fleshpots of Egypt."

Ugeskrift for Læger, Copenhagen

Oct. 3, 1918, **80**, No. 40

125 *Induced Pneumothorax for Lung Gangrene. F. Tobiesen.—p. 1577.
126 *Influenza. V. Erlendson.—p. 1581; T. Wernøe.—p. 1584.
127 Recent Literature on Pathologic Anatomy of Influenza. E. Begtrup.—p. 1586.
128 The Pneumococcus and Influenza. R. Nielsen.—p. 1592; V. Bie. —p. 1595.

Oct. 17, 1918, **80**, No. 42

129 Technic for Blood Platelet Count and its Significance. H. C. Gram.—p. 1651.
130 Antistreptococcus Serum in Treatment of Influenza. C. U. Maaløe. —p. 1659.

125. **Induced Pneumothorax in Treatment of Gangrene of the Lung.**—Tobiesen reports the case of a young man who developed a gangrenous process in the apex of one lung from aspiration of septic material. A large cavity resulted, but under artificial pneumothorax conditions were restored to clinically normal in the course of a few weeks. Under any other treatment months would have been required to accomplish the same result, if it could have been realized by other means. In another case a man of 46 developed a gangrenous focus of unknown cause and it kept constantly spreading by small foci. No benefit was derived from the attempts to induce artificial pneumothorax as adhesions, etc., counteracted these attempts. He reviews the scanty literature on pneumothorax induced for other than tuberculous processes.

126. **Influenza.**—Erlendson reports two cases of influenza in which symptoms of heart block developed the second and the eighth days of influenza, and several weeks elapsed before the earning capacity was regained. In several soldiers pleurisy developed as a complication of the influenza.

Wernøe reports three cases of paraparesis as a complication of what he calls *spansk Syge* in two men of 53 and 57, and a woman of 40. The latter is known to have a tendency to hysteria.